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HYPERSENSITIVENESS.*

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I FIND myself in a difficulty at the very outset of my remarks on what is admittedly a subject full of difficulties, a subject the discussion of which I should not have ventured to introduce had I not been requested to do so by your honorary secretaries. The difficulty to which I allude is that of definition. To the condition which is the subject of our discussion several names have been applied—to wit, hypersensitiveness, supersensitation, and anaphylaxis. Richet, to whom we owe the last term, defined it as meaning "that curious property which certain poisons possess of increasing instead of diminishing the sensibility of the organism to their action." Since Richet's first experiments were made it has been shown that hypersensitiveness may be set up by substances which are not necessarily poisonous, unless a very special signification is to be attached to the word "poison." But if the word "substance" be substituted for the word "poison" in Richet's definition, I should accept it as being satisfactory. The difficulty to which I refer, however, is due to the fact that recently certain writers have been applying the term "anaphylaxis" to almost any exhibition of sensitiveness to the action of certain substances. Take, for instance, the

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well-known serum-sickness, which so often follows the injection of an antitoxic serum into a human being. It manifests itself broadly in two forms; in one of them the symptoms appear after a lapse of several days, in the other after a much shorter interval, sometimes, indeed, almost immediately. Now it has been found that, with certain exceptions to which I shall refer later, the second variety of the sickness occurs in persons who have on some previous occasion been injected with serum, and the symptoms are of such a nature as, taken in connection with the shortened interval between injection and sickness, to suggest that the patient has been rendered hypersensitive to the serum by the first injection. According to Richet's definition it is only these patients, that is, those who are the subjects of the second form of serum-sickness, who can be said to be in an anaphylactic state. Dr. D'Este Emery, however, in an admirable critical survey of the subject, which he presented to the Section of Pathology at the annual meeting to the British Medical Association last year, wrote of the serum-sickness—and he meant both forms of serum-sickness—as being "perhaps the most important manifestation of anaphylaxis in man."

But I should join issue with him on this point, and I would reserve the epithet "anaphylactic" for such cases as exhibited the abnormal form of serum-sickness. In my remarks, therefore, I shall employ the word in the sense in which it was meant to be used by Richet.

It was Richet who first worked experimentally at anaphylaxis. He prepared toxic substances from certain sea-anemones and mussels. He found that if he injected very small quantities of these substances into dogs no symptoms of illness followed; the animals remained apparently quite healthy; but if into the animals thus treated he injected, after an interval of several days, a second small dose of the toxic substance, a dose so small that it would produce no symptoms of illness in an untreated animal, then the dogs were extremely sensitive, exhibited toxic symptoms, and even died.

Rather more than a year after the publication of Richet's earliest researches, Arthus brought forward evidence of hypersensitiveness produced in the tissues of the rabbit. Injecting horse-serum subcutaneously into this animal he found that no noxious result of any kind followed. But when he repeated the injections at intervals, even in different localities, the tissues at the sites of the latest injections became inflamed and suppurated or sloughed. This condition is known as "Arthus's phenomenon," and I mention it because it is met with very occasionally in the human subject. Arthus further

found that if to a rabbit once subcutaneously injected with horse serum a second injection was given intra-venously after an interval, the animal succumbed in a few minutes. The importance of the work of Richet and Arthus was forced upon the attention of other investigators, not only by its intrinsic merit, but by the light it shed upon certain phenomena which had been observed in connection with the serum treatment of disease in man, and especially of diphtheria. The antitoxic value of serum is tested by injecting it together with diphtheria toxin into guinea-pigs. If the serum is sufficiently antitoxic the animal suffers no ill-effects. It was not unnaturally thought that such animals as remained healthy might be used again for the purpose of testing serum, and many were indeed so used. It was, however, found that in most instances if a period of several weeks had been allowed to elapse between the first injection or series of injections of serum and the second, certain symptoms immediately or almost immediately set in and the death of the animal very quickly followed. It was Theobald Smith who noticed that this condition occurred only in "used" guinea-pigs; hence it has been termed "Theobald Smith's phenomenon," and its recognition was the cause of an investigation by Otto, of which the results were published in 1906. Meanwhile, somewhat similar, though fortunately not so constantly severe, effects of injections—usually second injections of serum—had been observed in human beings; and the significance of these clinical cases was pointed out by von Pirquet and Schick in 1905. It was, however, the occurrence of a few fatal cases which led to the investigation of the subject by Rosenau and Anderson, of the United States Public Health and Marine Hospital Service. Their first results were published in 1906. Since then a large number of observations, both experimental and clinical, have been made known, and the literature of the subject is already extensive.

Amongst all the facts ascertained by experiment there are some which stand out pre-eminently. First the potentiality for producing the condition of anaphylaxis appears to be confined to proteins, animal and vegetable, as, for example, serum, milk, extracts of bacterial cells. Secondly, the protein must be foreign to the animal it is proposed to hypersensitise. Thus, while you can render a guinea-pig anaphylactic by injecting into it the serum of some other animal, *e. g.* a horse, you cannot do so if you employ either its own serum or the serum of another guinea-pig.

Thirdly, between the injection of the first dose of foreign protein, called the "sensitising" dose, and the second, called the "reacting"

dose, a period of some length must elapse (latent period). It is usually longer than a week. Fourthly, the reacting protein must be the same as the sensitising protein. For example, if you have sensitised a guinea-pig with horse-serum you can make it react only with horse-serum ; it will not react if you use, say, goat-serum on the second occasion. There are, however, exceptions to this rule, especially in respect of the serum of nearly related species. Thus a guinea-pig can be sensitised to horse-serum by treating it with the serum of a donkey. Fifthly, while animals are most readily sensitised by injecting the protein subcutaneously, intra-venously, or into the brain, it is important to note that anaphylaxis can be induced by feeding them on foreign proteins. Sixthly, the symptoms of anaphylaxis vary not only in different species of animals, but even in animals of the same species. But they do not vary with the sensitising protein. The rapidity with which they appear is influenced by the method employed for giving the reacting dose. Amongst the most common symptoms are : signs of itching or irritation of the skin, cutaneous œdema, rapid and irregular respiration, death by asphyxia, believed to be due to spasm of the muscles of the medium-sized bronchi, pulmonary emphysema, rapid pulse, pulsation of the heart long after cessation of respiration, fall of blood-pressure, collapse, a fall of the temperature, vomiting and diarrhœa, muscular spasms, paralysis, convulsions. Seventhly, passive anaphylaxis can be conferred upon an animal. Thus, if the serum of a guinea-pig which has been sensitised with horse-serum be injected into a normal guinea-pig the latter will react to horse-serum after a comparatively short interval, an interval shorter than the latent period mentioned above. Eighthly, the young of a female animal which has been sensitised are in a condition of anaphylaxis to the sensitising protein, whether the mother has been sensitised before or after conception. That is to say, anaphylaxis may be congenital. Ninthly, according to Rosenau and Anderson, guinea-pigs can be rendered refractory to the reacting dose if they receive a series of doses of the protein daily for ten or more days. Tenthly, and lastly, the duration of anaphylaxis appears to vary with the animal.

So far I have been speaking of the facts of anaphylaxis as they have been ascertained by experimental investigation in animals ; I will now say a few words on the condition as it has been observed in man. Nearly all the facts of human anaphylaxis have been obtained from observations made of the serum and vaccine treatment of disease, and especially of the former. As soon as the antitoxin treatment

of diphtheria was introduced it was noticed that a certain number of the patients who received the serum exhibited symptoms which it was clear were caused by the serum. The chief symptoms of this serum-sickness, as it was subsequently termed by von Pirquet and Schick, were fever and rash. Occasionally, also, there was arthritis, usually not severe. An experience of some thousands of cases extending over nearly eighteen years shows that about one third of the patients suffer from a rash, usually with, but occasionally without fever, and that about one in every six of these cases also had arthritis. It is very rare to get arthritis without a rash. An attack of serum-sickness will follow, and frequently does follow, a single injection of serum. I have said that about one third of the persons injected suffer from serum-sickness; that is to say, that one third are susceptible to the effects of the serum—reveal an idiosyncrasy to it—while two thirds do not. Further, in the production of serum-sickness the peculiarity of the serum has to be considered, for it is a matter of common experience that some serums will give rise to an attack of serum-sickness in a much larger proportion of the persons treated than do other serums; and again, the severity of the attack of sickness varies not only with the persons attacked, but also with the serum. Another point to be noted in connection with the serum-sickness is that between the injection of the serum and the onset of the illness there is an interval which is quite free from any symptoms of this particular disease. This interval has been called the incubation period, but I think it would be better to call it the latent period, for I am much inclined to doubt whether it is strictly analogous to the incubation period of an infectious disease. The length of the latent period is commonly eight to sixteen days; it may be as short as three or as long as twenty-one days; I have known it to be even longer, but it is very seldom shorter than six days; that is the important point to bear in mind. I am speaking now, be it remembered, of cases in which there has been only one injection, or series of injections in the course of four or five consecutive days. So far in respect of the ordinary form of serum-sickness, which may be termed the normal reaction of horse-serum in the human subject; though unpleasant it is rarely serious.

As time went on, after the introduction of the serum treatment of diphtheria, cases were met with in which the patient was suffering from a relapse or a second attack of diphtheria. Naturally he was subjected to the serum treatment, and it was then observed, in respect of some of the cases, that the patient underwent an attack of serum-sickness of quite an unusual character; and it was further

observed that an unusual attack of the sickness was confined to persons who had been treated with serum in the primary attack of diphtheria. The unusual nature of the serum-sickness may be shown in more than one way, but there are three chief varieties. In the first the latent period is normal, but the symptoms are severe beyond the average, and uncommon symptoms may be present, such as faintness, intra-thoracic and abdominal pain, invasion of the mucous membrane by the rash, and rapid evolution of the symptoms. In the second the latent period is shorter than normal, being from one to five days; the symptoms may or may not be unusually severe. In the third the latent period is very short, rarely longer than six hours, and not infrequently a few minutes, and the symptoms are prone to be of unusual severity and character; a high temperature; rapid evolution of the symptoms and invasion of the mucous membranes by the rash, cyanosis, hurried breathing, a rigor, even convulsions and collapse.

From the hypothetical point of view the most important features of these unusual attacks are the reduction of the latent period and the rapid evolution of the symptoms. The second and third varieties described above have been called by von Pirquet and Schick the "accelerated" and the "immediate" reaction respectively. And it was pointed out by these observers that an abnormal reaction never took place in a person who was reinjected within a certain period from the primary injection, and that this period was never shorter than the average latent period. This is the chief fact that shows the abnormal reaction to be an anaphylactic phenomenon. Just as not every person injected with serum undergoes an attack of serum-sickness, so not every reinjected person shows the anaphylactic reaction. During the fifteen years 1897 to 1911, 181 persons, mostly children, have come under my observation who have been treated with serum on two separate occasions for a primary attack and for a relapse or second attack of diphtheria. Of these, 116, or 64 per cent., underwent an attack of serum-sickness after the injection given for the relapse or second attack, that is, nearly double the average number of cases which follow a primary injection. In 89 of the 116 the latent period was shorter than six days.

I have stated above that in animals the duration of the anaphylactic condition has been found to be variable. It is believed to last the lifetime of a guinea-pig. I do not know how long it lasts in man; perhaps for his lifetime. I have recently had under my observation a youth who was injected with serum in the Eastern Hospital on October the 15th, 1904, when he was aged 10 years. After a latent

period of eighteen days—rather longer than usual—he underwent an attack of serum-sickness (fever, rash and joint pains). On December the 7th, 1911, that is to say, 2609 days after his first injection—upwards of seven years—he was reinjected with serum for a second attack of diphtheria. Half an hour after the injection a rash came out on his face and remained out till the next day, and four days after the injection appeared the first symptoms of a severe attack of serum-sickness (fever, rash and arthritis). Amongst my cases the shortest interval between the first and the second injections, in which the latter has been followed by an abnormal reaction, has been eighteen days.

Besides these instances of anaphylaxis in persons who have been sensitised by a previous injection of serum, there are now a considerable number of cases on record in which the anaphylactic phenomena have occurred after a single primary injection of serum. It is this group which has furnished examples of the immediate reaction of the most severe character. Some of them have been fatal. I was fortunate not to have a fatal case amongst those I referred to above, who were treated twice with serum ; but three or four of them gave me much anxiety for a short time. I shall say something later about these cases of anaphylaxis after a primary injection.

After this very brief account of the facts of hypersensitiveness, as they have been elicited by experiments on animals and by observations on serum-sickness in man, I pass to a consideration, which must also be brief, of certain problems which it has been hoped, if not expected, would be illuminated by the facts mentioned. It will, however, be necessary first to say a few words on the sequence of events which terminate in the anaphylactic state. To explain the phenomena almost as many hypotheses have been put forward as there have been investigators. There are at least three distinct views. First, there is Courmont's suggestion that the injection of the foreign protein leads to the absorption of an inherent protective substance, the loss of which leaves the animal defenceless against a second injection of the protein. The second is that propounded by Gay and Southard, who believe that the foreign protein contains a substance (anaphylactin) which sensitises the cells of the body, but is slow in its action and does not produce toxic symptoms. The foreign protein also contains other substances of a toxic nature, which are rapidly eliminated from the body so that they have disappeared by the time the cells have been sensitised by anaphylactin. On a second injection, however, of the foreign protein, the

fresh supply of these substances acts at once upon the sensitised tissues, and the phenomena of hypersensitiveness are produced. The third, and most favoured hypothesis, is that which supposes the evolution of antibodies. This is the view which best harmonises with Ehrlich's side-chain hypothesis.

The introduction of the antigen, in this case a foreign protein, gives rise to the slow formation of an antibody; and some reaction between the antibody, newly formed and continuing to be formed, and the antigen, or some constituent of it, causes the normal reaction seen in the human subject. When a fresh amount of antigen is introduced, there is a rapid combination or reaction between it and the antibody, and the immediate reaction is the result. The accelerated reaction can be explained by the supposition of von Pirquet and Schick, namely, that besides the production of antibody, a result of the primary injection of the antigen is such an alteration of the tissues as to allow of a more rapid formation by them of an antibody, when fresh antigen is introduced, than after the primary injection. To this altered state of the tissues the term "allergy" has been applied.

Has the acquisition of the facts of anaphylaxis brought us nearer the solution of any of the problems which interest especially the members of this Section?

The hypersensitive condition reminds us of the negative phase which was discovered by Sir Almroth Wright to be induced by, and to be present very soon after, the injection of bacterial vaccines. During this phase the bactericidal power of the blood is diminished. The phase, however, is transient, and is succeeded by a positive phase of much longer duration, in which the bactericidal power is higher than it was before the introduction of the vaccine. But the negative phase may be prolonged by reinjection of the vaccine before its termination, and by the injection of large amounts of vaccine.

Richet believes that anaphylaxis is a step towards the production of immunity; and in this view he is supported by Anderson and others. The animal has been brought to such a condition as to offer a very rapid and active resistance to the sensitising toxin; and this condition may be regarded as being even advantageous to the animal. I should mention that, at any rate in some animals, if the animal has survived the effects of the reacting dose, subsequent doses have no effect. The animal is then said to be in a condition of anti-anaphylaxis. I take it I am right in supposing that this is a condition which is of the nature of immunity, of course only in

respect of the particular protein employed. But it is very difficult to reconcile Richet's view with the facts of anaphylaxis as it appears in the guinea-pig, or even in the human subject. The primary dose of protein hypersensitises the guinea-pig to such a degree that it frequently succumbs to the reacting dose, and the animal never has a chance of becoming immunised. Moreover, in that animal the condition is by no means transient. It must also be remembered that very small, even minute doses of the protein, are efficacious for the purposes of sensitising and of reacting, and that for each of these purposes one single dose is sufficient. To produce immunity to the action of the protein, either a number of successive doses at short intervals (a day or so) during a considerable period are necessary, or the animal must receive three injections of the protein at longish intervals and survive the effects of the third. I agree, therefore, with Dr. Emery in rejecting Richet's views.

A similarity between the course of events and the symptoms of serum-sickness in man and those of an attack of certain of the acute infectious diseases has suggested that the latter may be explained by the former. Between the injection of the foreign protein (horse-serum) and the onset of the symptoms of serum-sickness is an interval of a week or two's duration, a latent period which recalls the incubation period of many of the acute infectious diseases. In fact the latent period of serum-sickness is often called the incubation period. Again, the symptoms of serum-sickness resemble in several points those of certain of the acute infections. These are a rash, fever, and often glandular enlargements. Dr. Emery well summarises the anaphylactic hypothesis of the development of an attack of an acute infectious disease as follows, after having first drawn attention to the fact that a bacterial protein will act as a sensitising agent: "A few bacteria gain access to the body and some of them disintegrate, so that their proteins, or some derivative thereof, gain access to the tissues and render them sensitive. The remainder of the invaders have a prolonged tussle with the defences of the body, but after a time they grow to such an extent that they give off enough protein to constitute a reacting dose, and symptoms develop. The period which this takes would constitute the period of incubation, which, I think, cannot be accounted for satisfactorily on any other theory." It is clear, however, from a remark made later in his paper, that this hypothesis does not completely satisfy Dr. Emery. I confess it does not satisfy me. In my opinion the resemblance between serum-sickness and an attack of an acute infectious disease is much more apparent than real. To me it seems to be a fatal objection to

the hypothesis that whereas after an attack of an acute infectious disease the individual is immune to another attack usually for a considerable length of time, the person who has undergone an attack of serum-sickness often remains in an extremely sensitive condition in respect of another injection of the protein which caused the sickness. Moreover, clinical experience goes to show that relapses and second attacks of the acute infectious diseases, far from being more severe than the primary attack, as they should be on the anaphylactic hypothesis, are as a rule less severe.

The occurrence of a rash in serum-sickness is also another superficial resemblance between it and certain of the acute infectious diseases. The most common rashes of serum-sickness are urticaria and a variety of erythema multiforme, frequently erythema marginatum, to wit, acute infectious erythema, a disease I have never seen. It is said to be infectious and epidemic, but its occurrence has so far been rare. It is quite true that serum-sickness rashes are not infrequently described as being morbilliform and scarlatiniform, but I think that often this brief description is given to save the writer's pen. In my experience these rashes are very rarely quite like those of measles and scarlet fever. And I never yet saw an antitoxin rash that bore the slightest resemblance to the eruptions of smallpox and chickenpox. But for another fact, to be mentioned presently, I should not be disposed to attach any importance to the absence of a close resemblance between the rashes in question; bearing it in mind, however, I think the differences are worth noting.

Though I have not derived much satisfaction from a comparison of the phenomena of anaphylaxis and an attack of an infectious disease, yet I am far from believing that clinical medicine does not present us with instances of a condition which is akin to, if not the same as, hypersensitiveness to proteins. One cannot help being struck with the similarity between attacks, and especially the more severe attacks, of the immediate reactions, and attacks of illness brought on by the ingestion of certain articles of diet, the bites of certain insects, and the inhalation of certain pollens and other matter. Now when these illnesses are accompanied by a rash it is very frequently urticaria or a variety of multiform erythema. Dyspnœa and collapse are also met with. I have mentioned earlier in my remarks that the immediate reaction occurred after a second injection of serum, but that it has also been observed to follow a primary injection. In fact, most of the severest cases belong to the last group. It is a curious fact that a large proportion of these cases of imme-

diate reaction after a primary injection have occurred in persons who were the subjects of asthma or some allied condition. Some of the victims have been peculiarly sensitive to the emanations from the horse. I have mentioned that the anaphylactic state can be transmitted, in some animals at any rate, from the mother to her offspring, and also that it can be induced by ingestion as well as by injection into the tissues of a protein. There are grounds, therefore, for assuming that one person is congenitally anaphylactic, and that another is sensitised by an article of food.

When discussing the resemblance between an attack of serum-sickness and of an infectious disease, I stated that there was one fact that led me to attach some importance to the differences between the rashes of serum-sickness and those of the exanthemata. This fact is that while the common rashes of serum-sickness (urticaria, etc.) are not those distinctive of the acute infectious diseases, they are very frequent accompaniments of the anaphylaxis-like attacks to which I have just alluded (food-poisoning, insect bites, asthma fits, and the like). Further, while the serum rashes are not those which are diagnostic of the acute exanthemata, yet urticaria and erythema multiforme are frequently met with as so-called "secondary" or "accidental" rashes during the course of an acute infectious disease; so that I am inclined to believe that if we are to find anaphylactic phenomena in these diseases we must search not so much during their early as during their late stages.

It has been suggested recently that to the more obvious examples of anaphylaxis (obvious, I mean, because of their clinical resemblance to serum-disease in man and the illnesses induced experimentally in animals) there should be added a variety of other diseases, of which the causes have hitherto escaped a satisfactory explanation, *e. g.* "fits" of various kinds (uræmic, eclamptic, etc.). To suppose that some of them were examples of anaphylaxis would be to suppose also that an individual could be sensitised by a protein elaborated somewhere in his body. But might not a protein of morbid origin, or a protein derived from some particular and limited tissue, act as a foreign protein to the tissues generally? Some evidence has been adduced to show that this may be the case. For further particulars concerning these diseases I may refer you to a paper by Dr. Batty Shaw in the 'Lancet,' 1912, i, p. 713, as I have not now the time at my disposal to enter into details concerning them.

It may be said that the recognition of such and such a morbid state as an example of anaphylaxis does not bring us nearer the explanation of the condition; it is merely a multiplication of instances.

Even if we admit this statement to be true, at any rate for the present, yet I think it will be allowed that the acquisition of this new set of facts may be of great service in the treatment and prophylaxis of disease.

THE BLOOD-PRESSURE IN SCARLET FEVER.

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Historical note.—It is only within the last ten years that systematic observations on the blood-pressure in scarlet fever have been made with the sphygmomanometer, though the tension in post-scarlatinal nephritis had been examined with the sphygmograph at a much earlier date by Galabin (1873), Mahomed (1874), Gresswell (1884), and Riegel (1884).

Neu (1902) found that the blood-pressure sank during the febrile period and rose again in convalescence. Kolossova (1902), on the other hand, found that a rise occurred during the eruptive period, followed by a fall. Slatkow (1904) came to the same conclusion. Tscherepnin (1904) found that the highest blood-pressure was met with in the eruptive stage, and that the tension fell parallel with the fever. In the third and fourth weeks a fresh maximum pressure might be observed, concurrently with the onset of nephritis, the blood-pressure falling again as the nephritis cleared up.

The above four observers all made use of Gärtner's tonometer.

Federn (1903) with von Basch's instrument found that in scarlet fever, as he had also observed in cholera and malaria, the pressure was abnormally raised, and that the severer the infection the higher was the pressure. He admitted, however, that further observations were required to confirm his work. These, it may be remarked, have not been made. In convalescence he found the blood-pressure returned to normal. Injection of Moser's serum was followed by an immediate fall, though no such result attended the injection of ordinary horse serum.

Weigert (1907) used Riva-Rocci's instrument in 64 cases, employing the broad armlet in 5 cases and the narrow armlet in 59 cases. He found that scarlet fever following a normal course had hardly any effect on the blood-pressure. At most the readings were 10 mm. higher in late convalescence than during the febrile stage

and the first weeks of convalescence. The lowest record was frequently obtained in the first few days after the temperature had become normal, or in cases of protracted pyrexia in the last few days of the febrile period. Cardiac disturbance was occasionally accompanied by a moderate rise of pressure. Abnormally high readings were recorded in a fatal case of acute nephritis (*vide infra*).

Nobécourt and Tixier (1908) used Potain's instrument in 33 patients of both sexes whose ages ranged from two to sixteen years. They found that as a rule the pressure sank from the beginning of the disease until the sixteenth day, but less frequently it remained stationary, and that in a few it rose. After the sixteenth day it usually rose again, but in a few cases it remained stationary. Change of diet, the character of the attack, and the occurrence of complications had no appreciable influence on the blood-pressure.

Teissier and Tanon (1908) examined 73 cases in adults between nineteen and twenty-five years of age with Potain's instrument: 38 were males, 35 females. They found that the blood-pressure was more liable to sink in the scarlet fever of the adult than in that of the child. The fall was early, and might even be present in the pre-eruptive stage. As in children, the pressure did not appear to be influenced by the character of the diet, nor, with the exception of nephritis with massive albuminuria, in which the tension rose, were complications associated with a rise of pressure. In mild cases the fall of pressure bore no relation to the temperature nor to the pulse frequency. In severe cases in which there was considerable hypotension the extent of the fall was related to the degree of pyrexia and tachycardia. Return of the pressure to the normal might be early or late, slow or rapid.

Since the appearance of Teisser and Tanon's paper no series of observations on the blood-pressure in scarlet fever has been published, but a few writers have drawn attention to the marked hypotension likely to occur in severe forms of the disease, and have referred this symptom to acute suprarenal insufficiency on account of the concomitant symptoms and post-mortem findings (Sergent, Hutinel, Comby, Ribadeau-Dumas and P. Harvier).

Hutinel, Grysez and Dupuich have recorded cases where the administration of adrenalin has been followed by rapid rise of blood-pressure and disappearance of the other symptoms of suprarenal involvement. Pospischill, on the other hand, who, like myself, had found adrenalin of great value in diphtheria, has observed no benefit from its use in scarlet fever.

The present paper is based on observations made on 122 cases of

scarlet fever with C. J. Martin's modification of Riva-Rocci's sphygmomanometer. As in my recent study of the blood-pressure in diphtheria, the systolic pressure as measured by the disappearance of the radial pulse was alone taken into consideration. The measurements, as far as possible, were taken at the same time each day between 2 and 3 p.m., *i. e.* from one and a half to two hours after food.

Age and sex.—Table I shows that the great majority of the patients were children: 79 were males, 43 females. As in diphtheria, there was no appreciable difference in the blood-pressure of any two individuals of different sexes, but of the same ages and suffering from attacks of equal severity.

Table I.

Years.	Males.	Females.
2–3	0	1
3–4	1	1
4-5	5	3
5–6	3	2
6–7	9	6
7–8	9	3
8–9	6	7
9–10	7	5
10–11	6	6
11–12	5	0
12–13	6	3
13–14	2	2
14–15	3	0
15–34	17	4
	79	43

Classification of cases.—In 30 cases the blood-pressure was taken in convalescence only during the occurrence of nephritis. The remaining 92 were classified according to the character of the initial attack into severe (14 cases), moderate (26 cases), and mild (52 cases).

The blood-pressure in scarlet fever.—As judged by the standard of Cook and Briggs, according to which the blood-pressure of children up to two years is 75–90 mm. Hg., of older children 90–110 mm. and of young adults 130 mm., 23 of the 92 cases, or

25·0 per cent., showed from varying periods a pressure below the normal. The fall was most frequent and marked in the severe cases, among whom it occurred in 9 out of 14 cases, or 64 per cent.; in the moderate it was noticed in 7, or 26·3 per cent., and in the mild in 10, or 19·3 per cent.

Not only was the actual percentage of cases in this series showing a fall of blood-pressure decidedly less than that among my 179 cases of diphtheria, in whom it was 35·1, but the degree and duration of the fall were always much less marked. Thus in only 7 did the fall below normal exceed 10 mm., ranging in these cases from 12–30 mm., and in only 7 did it exceed a week, the duration in these cases being from 8 to 12 days. None showed a persistent rise above the normal standard of blood-pressure. In the acute stages, however, supra-normal readings were recorded in 16 cases.

On adopting Nobécourt and Tixier's plan of comparing the maximum pressure recorded during the first four days of the disease with the maximum pressure from the thirtieth to the fortieth days, when the patient could be regarded as normal, the following results were obtained: In 15 the blood-pressure was higher in convalescence than in the acute stage, in 37 it was lower, and in 25 it was the same at both periods.

From this it will be seen that in the majority of cases any change in the blood-pressure in scarlet fever was in a downward direction, in accordance with the general rule that febrile diseases tend to lower the blood-pressure.

Date of highest and lowest blood-pressure.—The following tables show the dates at which the highest and lowest blood-pressures were recorded. In the great majority the highest readings were obtained in the first week. There was also a preponderance of the lowest readings in the first week, though a large minority were found in the second week also.

TABLE II.—*Showing the Number of Cases in each Week in which the Highest Readings were Recorded.*

	1st week.	2nd week.	3rd week.	4th week.	5th week.	6th week.
Severe	11	1	0	1	0	1
Moderate	17	1	4	2	2	0
Mild	39	4	6	3	0	0
	67	6	10	6	2	1

TABLE III.—*Showing the Number of Cases in each Week in which the Lowest Readings were Recorded.*

	1st week.	2nd week.	3rd week.	4th week.	5th week.	6th week.	7th week.
Severe	6	6	0	1	0	1	0
Moderate	13	11	1	0	0	0	1
Mild	25	22	4	0	1	0	0
	44	39	5	1	1	1	1

In 28 cases (4 severe, 9 moderate, 15 mild) the highest and lowest readings were both observed in the first week, the differences between the two ranging from 10 to 40 mm.

The preponderance of the highest readings in the first week is to be attributed, as in diphtheria, partly to the febrile disturbance and partly to the excitement caused by the application of an unfamiliar instrument. In support of the last explanation is the fact that among 82 cases admitted during the first week of the disease, in 59 the highest reading was the first taken. The difference between the highest and lowest records in a given case was naturally more marked in the severe than in the moderate, in the moderate than in mild cases. Thus among the severe cases the greatest difference was 60 mm., and the average 27 mm., among the moderate the greatest difference was 32 mm., and the average 16 mm., and among the mild the greatest difference was 32 mm., and the average 13 mm.

The highest reading apart from nephritis occurred in a girl, aged 15 years, convalescent from a severe attack, whose blood-pressure from the forty-ninth to the sixtieth days ranged between 130 and 150 mm. The lowest reading in a case which recovered was 70 mm., which was registered on three occasions in a girl, aged 6 years, convalescent from a mild attack. In none of the other cases which recovered did the blood-pressure fall below 80 mm.

TABLE IV.

	1st week.	2nd week.	3rd week.	4th week.	5th week.
Severe	1	1	0	0	1
Moderate	0	3	1	2	1
Mild	0	1	4	3	0
	1	5	5	5	2

After deducting three fatal cases and two in which the blood-pressure never reached normal again during the period of observation, the date at which the pressure returned to normal according to Cook and Briggs' standard is shown in Table IV, from which it is seen that in the great majority the normal tension was regained by the fourth week.

Relation of blood-pressure to pulse-rate.—The highest pulse-rates were invariably found in the first week, and the lowest, as a rule, in the second and third weeks. The following table shows the exact figures in 85 cases:

TABLE V.—*Showing Weeks of Highest and Lowest Pulse-rates.*

	Highest pulse-rate.	Lowest pulse-rate.		
	1st week.	2nd week.	3rd week.	4th week.
Severe	9	2	3	4
Moderate	26	9	14	3
Mild	50	38	11	1
	85	49	28	8

Comparative readings in the erect and recumbent positions.—The readings in the erect and recumbent positions in 95 patients in whom these comparative observations were made were as follows: In 25 the readings were the same, in 21 the reading was higher in the recumbent than in the erect position, and in 49 higher in the erect than in the recumbent position, when the patient was first allowed to get up. Thus in 46 cases, or 48·4 per cent., the reversal of the ordinary relations between the records in the two positions was found. This occurrence of the so-called hypotension of effort is liable to occur in convalescence from any acute disease, and has already been illustrated in my diphtheria cases, among whom it was still more frequent, occurring in 80 out of 103 cases, or 77·6 per cent.

In every case the normal relation was finally re-established before discharge from hospital.

Effect of complications on blood-pressure.—My own observations serve to confirm those made by Nobécourt and others (*vide supra*), to the effect that with the exception of nephritis complications have little or no effect on the blood-pressure in scarlet fever.

Thus among 11 cases of *rheumatism*, in 7 no change whatever was

noted, and in 4 there was a transient rise varying from 2 to 16 mm.

With the onset of *cervical adenitis* in convalescence, which occurred in 13 cases, in 8 there was no change, in 3 there was a rise of from 14 to 20 mm. and in 2 there was a fall of from 4 to 12 mm.

The occurrence of *otitis* in 7 cases was not accompanied by any change.

Endocarditis, which was noted in 2 cases, was associated with a slight rise in one case, and by none in the other.

Laryngitis, a terminal phenomenon in 2 cases, had a decidedly hypertensive action owing to the obstruction to respiration, the blood-pressure rising in two days in a girl, aged 9 years, from 90 to 120 mm. In the other case, a girl, aged 3 years, the blood-pressure rose in twenty-four hours from 90 to 110 mm.

Of 7 cases of *simple albuminuria* without other signs of nephritis 2 showed no rise, and 5 showed a rise ranging from 2 to 20 mm.

Nephritis.—Of 33 cases of nephritis only 12, the details of which are given in Table VI, showed any hypertension, and of these 3 had a supernormal reading only while the temperature was raised. Most of the twelve cases showed more or less marked oliguria and a relatively slow pulse.

Table VI.

Age.	Blood-pressure.	Pulse.	Ounces of urine in twenty-four hours.	Duration of hypertension.
4 years	116	136	11–16	1 day.
6 ,,	140–116	140	9–26	12 days.
7 ,,	120	68	40–50	1 day.
8 ,,	120	72	30	2 days.
9 ,,	130–120	52	8–28	7 ,,
9 ,,	150–120	144	35–37	3 ,,
10 ,,	120	72	21	1 day.
10 ,,	130–120	72	11–27	10 days.
10 ,,	120	64	1–28	4 ,,
10 ,,	126	72	20–45	7 ,,
11 ,,	120	68	14	1 day.
12 ,,	120	80	32	1 ,,

In the remaining 21 patients, whose ages ranged from three to twelve years, the blood-pressure did not rise above 110 mm.

The absence of any rise of blood-pressure in many cases of post-

scarlatinal nephritis and the large number of cases in which only a slight rise was noted are in keeping with the fact that scarlatinal nephritis as a rule is a benign affection, the great majority of such cases—six sevenths according to Heubner's estimate—ending in complete recovery.

All my cases of nephritis recovered, and beyond drowsiness, occasional vomiting and headache, no symptoms suggestive of uræmia were observed. On this account no remarkably high readings were noted. Beyond some puffiness of the face none showed any degree of œdema. The fatal cases of scarlatinal nephritis as well as those with any considerable degree of œdema are usually cases in which the initial disease has been overlooked and the renal lesions have been neglected until irreparable damage has been done. Weigert relates such a case in a boy, aged 6 years, admitted to hospital with post-scarlatinal nephritis at the end of the third week. The blood-pressure on admission was 240 mm., and two days later 170 mm., a few hours before death. Hutinel also mentions a case with a pressure of 190 mm., accompanied by convulsive attacks which disappeared as the pressure fell.

My own observations thus concord more with those of Buttermann, Carter and Shaw, who in many cases of acute nephritis found no appreciable rise of pressure, than with those of Riegel, who stated that hypertension in scarlet fever was almost invariable.

It is of historical interest that Mahomed in 1873 distinguished a scarlatinal nephritis with a rise of arterial tension from scarlatinal nephritis without a rise, the former being due in his opinion to constipation and the latter to chill. His views, however, did not receive confirmation from subsequent writers. Astley Gresswell in his well-known monograph on scarlet fever contested this ætiology, and pointed out that it was impossible to distinguish these cases, rightly affirming that in scarlatinal nephritis there might be very marked tension or no more than occurs in health and almost every intermediate grade.

Prognostic value of sphygmomanometry in scarlet fever.—The early fatal cases showed a rapid fall of blood-pressure which was even more marked than in diphtheria, but it cannot be said that the use of the sphygmomanometer in the acute stage of scarlet fever any more than in that of any other acute disease with the exception of pneumonia affords information that is not given by the ordinary methods of examination. From a practical point of view its value is greater in the examination of cases of post-scarlatinal nephritis in which, *ceteris paribus*, a higher reading indicates a greater damage to the

kidney. The preservation of such records would be specially valuable to the family practitioner who has charge of the same individual during a number of years in enabling him to estimate the extent of the renal lesion and to direct his manner of life accordingly.

Adrenalin therapy in scarlet fever.—Hypotension being neither so frequent nor as a rule so marked as in diphtheria, the exhibition of adrenalin is seldom required in scarlet fever. In the present cases the drug was not employed. In view, however, of the encouraging results already alluded to, obtained by Hutinel and others, it is indicated in cases showing symptoms of acute suprarenal insufficiency. In many cases the suprarenal lesions are doubtless slight and transitory, but in a case of malignant scarlatina recorded by Comby in which the symptoms were repeated vomiting, diffuse abdominal pain, fœtid diarrhœa, and arterial hypotension, the necropsy showed complete destruction of the suprarenals by hæmorrhage. In such a case opotherapy, like any other treatment, is unavailing, but as the diagnosis of suprarenal hæmorrhage in the course of infectious disease cannot be made with certainty during life, signs of suprarenal involvement, especially pronounced hypotension, should be met by the administration of adrenalin or suprarenal extract.

Summary.

(1) In a series of cases of scarlet fever the blood-pressure was found to be subnormal in 25 per cent., the extent and duration of the depression being as a rule in direct relation to the severity of the initial attack.

(2) In the great majority the highest readings were found in the first week; there was also a predominance of the lowest readings in the same week, but in a large minority the lowest readings were found in the second week. The normal tension was usually re-established by the fourth week.

(3) In the majority of cases the blood-pressure was lower in convalescence than in the acute stage.

(4) In 48·4 per cent. of the convalescent cases the readings in the recumbent and erect positons were the same, or the recumbent was higher than the vertical record until convalescence was firmly established (hypotension of effort).

(5) With the exception of nephritis complications had little, if any, effect upon the blood-pressure.

(6) In only a minority of the nephritis cases—12 out of 33—was

the blood-pressure above normal, and the hypertension was never extreme nor of long duration.

(7) Sphygmomanometry in scarlet fever, as in most of the other acute diseases, is of little practical importance in the acute stage, but in convalescence may give some indication of the severity of the renal lesion which may be of value in subsequent treatment of the patient.

(8) Pronounced arterial hypotension, especially if accompanied by other signs of acute suprarenal insufficiency, should be treated by adrenalin or suprarenal extract.

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TREATMENT OF NOCTURNAL ENURESIS IN CHILDREN.

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Nocturnal enuresis is one of the commonest disorders of childhood. Physiological during the first two years of life, it becomes, if persistent, a very troublesome condition.

Each author has a theory as to its pathogeny, and seeks to bear out its correctness by statistics. From this has resulted a multitude of therapeutic measures, and Olivier rightly says, "Les traitements de l'incontinence nocturne des urines sont si nombreux, si variés, si contradictoires, que leur simple exposé sans commentaire fournirait sans doute un grand choix d'expressions techniques et sonores; mais, par contre, il serait fort pauvre d'idées pratiques."

A *resumé* of the principal theories as to the pathogeny of nocturnal enuresis will now be given. Some of the children who suffer from incontinence of urine have an imperfectly developed spinal cord and no treatment is then efficacious. Heubner believes that cases are most frequently due to a hypoplasia of the central nervous system, the condition being merely a persistence after the second year of a physiological occurrence in early life.

Pfister holds that those cases in which enuresis manifests itself after five years of age are due to epilepsy.

Guinon thinks that children who suffer from enuresis always have a nervous inheritance, and Frankl-Hochwart reports that many adults suffering from neurasthenia give a history of enuresis in childhood.

Hutinel and Merklen believe that enuresis is the pollakiuria of the sleeping child.

Freud noted hypertonus of the leg muscles in about one half of his patients, and therefore attributes the condition to hypertonus of the vesical muscles.

Excessive irritability of the nervous system as a whole or only a local reflex irritability are commonly marked.

Vandenbossche distinguishes the enuresis-spasm, which is due to over-excitability of the vesical centre in the spinal cord, from the enuresis-tic of psychic origin.

Trousseau attributed enuresis to vesical over-irritability; Guyon, on the other hand, attributed it to atony of the sphincter vesicæ.

Guinon thinks that enuresis is due to the over-excitability of the vesical fibres associated with a transitory abolition of the sphincter reflex.

Petit distinguishes three kinds of patients: (1) Children who are too lazy to rise from bed; (2) children who sleep so soundly that the warning of the distended bladder is unheeded; (3) children who dream that they are passing urine. Criado and Aguilar and Henoch also incriminate dreams, but Heubner declares that dreams are a mere symptom of enuresis.

Denis Courtade describes two varieties of idiopathic nocturnal enuresis: (1) The atonic, which results from a lack of tone in the external sphincter, with some defect in the nervous reflex mechanism; (2) the irritable, in which there is an exaggerated sensitiveness of the bladder. Both these varieties may exist in combination.

Civiale and Rochet and Jourdanet attribute enuresis to distension of the atonic bladder.

Among the reflex causes the most common are vulvitis and vaginitis in girls and urethritis and balanitis in boys. The seat of irritation may also be in the rectum, *e. g.* polypus, fissure, ulcer, and, much more frequently, infection with oxyuris. Calculi, tuberculosis and hypertrophy of the bladder have also been met with.

Ruhräh mentions the drinking of too much fluid, especially in the evening, and habitual eating of salt food.

Lewis Smith attributes nocturnal urinary incontinence to over-acidity. Clemens, on the other hand, regards alkalinity of the urine as the cause of the condition.

Children with adenoids are liable to suffer from enuresis. The statistics of Mygind, Fisher, Gruback, Allaria, Kapsaun and Cautas favour the correctness of this theory; the statistics of Lilang rather oppose it.

Leonard Williams and Hertoghe have noted thyroid insufficiency in children who suffer from enuresis.

Sydney Haas on the other hand reports a case of enuresis associated with hyperthyroidism.

Zanoni considers enuresis a functional disorder of the suprarenals.

Hammonic, studying the question of the relation of phimosis and enuresis, believes that a long adherent prepuce is a factor in the causation.

We believe that enuresis is sometimes due to an alteration of the hormone of the internal secretion of the kidney, which becomes unable to act on the bladder sphincter.

The methods to relieve the condition are as varied as the theories as to its pathogeny.

The following are the principal modes of treatment:

Among the drugs which have been employed by those who believe enuresis due to over-excitability are belladonna, antipyrin and bromide of potassium. Strychnine and hexamethylenamin are sometimes used. In order to improve the acidity alkalies are given.

Clemens recommends sodium phosphate if the urine is alkaline. Leonard Williams uses desiccated thyroid; McCready, Hertoghe and Ruhräh have also obtained satisfactory results with this drug.

Zanoni has cured his patients by the use of adrenalin.

Psychotherapy has also been advocated.

Liébault uses hypnotism; Farez has cured an infant, aged 26 months, by this means, and Cullère reports sixty-four cases and claims to have cured fifty and improved ten. The case of Voisin is less important because he also gave several epidural injections of artificial serum. Cullère uses simple suggestion without hypnotism.

The apparatus used by Génouville acts entirely by suggestion. It consists of two metal plates separated by a piece of absorbent cotton. These plates are connected by wires, each to one pole of a battery and a bell, and are placed in the bed beneath the child's pelvis. When the child urinates the wet cotton completes the circuit and the bell rings. The child is thus awakened, and in a few nights is frequently cured.

Hydrotherapy was used by Guersant and Underwood with favourable results.

Thure Brandt reports a series of cases cured or improved with massage *per rectum*.

Electricity has also been employed. Guyon and Ultzmann used faradic currents. Bordier advocates franklinisation, while Stevenson and Weill prefer galvanic currents. Denis Courtade claims to have effected a complete cure in 55 per cent. of his cases by electricity. All these authors support this method by statistics.

Bergé reports a case cured with enemata of bismuth subnitrate. Jaboulay has suggested retro-rectal injections of 100 to 150 grm. of artificial serum, and Cahier has recommended subcutaneous injections of 60 to 70 grm. into the perinæum, making the injection 1 or 2 cm. on either side of the mid-line.

Babinski and Boisseau report an interesting case in a girl between sixteen and seventeen years of age, whom they treated by lumbar puncture, removing 15 c.c. of fluid. After the second puncture the girl was entirely cured.

Albarran and Cathelin have suggested injections of artificial serum or of a 2 per cent. cocaine solution into the epidural space. This epidural method was used by several authors who consider it acts merely by suggestion. Dent, Valentine and Townsend used this method in the insane with good results. Loumeau claims to have cured 50 per cent. of cases; Luiz Montero, of Chili, has cured 88 per cent., and Kampsauer 75 per cent. In a series of eleven cases Bordot has cured ten, and very remarkable are also the statistics of Masmonteil, Barbier, Sisto and Saccone. On the other hand, in a series of fifteen cases Zubizarreta has cured only two.

Removal of adenoids also cures enuresis. Allaria reported 22 cases, of which 8 were cured and 3 improved; Kapsaun reported 55 cases, of which 50 were cured and 5 improved; and Cautas out of 15 cases cured 13 and improved 2. Lilang examined 50 children with enuresis, and found only 8 who had adenoids. Only 1 was cured by operation.

Hammonic performed 187 circumcisions for the purpose of curing enuresis. Of these 130 were cured.

We have employed Cathelin's method, Babinski's method, and renal opotherapy on the patients of the Children's Hospital in Rio de Janiero. The usual drugs (belladonna, potassium bromide, and the alkalies) were always used before epidural injections, which were tried only in the refractory cases. Several children were cured by drugs; only the seven obstinate cases are reported here, of which 5 were cured with epidural injections, one with renal opotherapy, while 1 was entirely refractory.

Case 1.—Girl, aged 12 years, admitted on May the 10th, 1911. No history of any nervous disease in the family. Full-term child. Breast-fed for twelve months. Smallpox at the age of eight years, nocturnal incontinence of urine since five years. No improvement from the use of bromides and alkalies. Urine: Specific gravity 1010; acidity (H^2SO^4) 0·49 per cent.; no pathological elements. Twenty c.c. of artificial serum injected into the epidural space on July the 16th. When seen on July the 28th she had had no more incontinence. Lost sight of.

Case 2.—Boy, aged 11 years, admitted October the 27th, 1911. Full-term child. No nervous disease in the family. Measles at two years. Nervous, over-irritable child. After measles began to suffer from diurnal and nocturnal incontinence. Has also moderate pollakiuria. Belladonna, strychnine, and sodium bicarbonate used successively with no improvement. Examination of urine: In April, 1910, when he was still taking alkalies, specific gravity 1009;

acidity (H^2SO^4) 0·98 per cent.; urea 11·12 per cent.; chlorides 3·5 per cent.; no albumin; no sugar. Fifteen c.c. of artificial serum were injected into the epidural space on April the 25th. The boy has now been quite free from incontinence for one year and ten months.

Case 3.—Girl, aged 11 years, admitted May the 21st, 1910. Full-term child. Mother hysterical. Patient is a nervous, over-irritable child, and frequently bursts into tears. She has always suffered from enuresis, and at present has also pollakiuria. No improvement from nux vomica, followed by belladonna and alkalies. Urine examination: Specific gravity 1015; acidity (H^2SO^4) 1·05 per cent.; urea 14 per cent.; chlorides 5 per cent. Fifteen c.c. of artificial serum injected into the epidural space on October the 16th, 1910; October the 17th to 19th, no enuresis; October the 20th to 22nd, enuresis; 23rd, 15 c.c. of artificial serum injected into the epidural space; complete recovery.

Case 4.—Boy, aged 9 years, admitted on February the 14th, 1911, Full-term child. Family history unimportant. No illnesses from birth till the present time. Alkalies used with no improvement. Urine examination: Specific gravity 1012; acidity (H^2SO^4) 0·47 per cent.; urea 12·00 per cent.; chlorides 7·00 per cent. Fifteen c.c. of artificial serum injected into the epidural space on May the 12th; recovery.

Case 5.—Girl, aged 7 years, admitted April the 11th, 1911. Full-term child. Has had measles. Family history unimportant. No improvement from alkalies and belladonna. Urine examination: Specific gravity 1018; acidity 1·20 per cent.; chlorides 8·00 per cent. Ten c.c. of artificial serum injected into the epidural space on June the 4th; June the 5th to 7th, enuresis; June the 8th, another injection of 10 c.c. of artificial serum; June the 9th to 11th, no enuresis; 11th, enuresis; 13th, no enuresis; 14th to 16th, enuresis; 17th, third injection of 15 c.c. of artificial serum into the epidural space, followed by recovery.

Case 6.—Girl, aged 11 years, admitted on November the 10th, 1909. Full-term child. Mother epileptic, father neurasthenic. Has had measles and whooping-cough; no adenoids; belladonna, strychnine, bromides, and alkalies tried with no improvement. Fifteen c.c. of artificial serum injected into the epidural space on February the 14th, 1910; February the 15th to March the 1st, enuresis as before; on March the 2nd a second injection of 15 c.c. of artificial serum. Enuresis persists till March the 10th, when a third injection of 15 c.c. of artificial serum is given. Enuresis continues. March the 15th, a fourth injection of 10 c.c.; no improvement. Last epidural injection of 15 c.c. of serum on March the 25th without improvement.

On April the 10th lumbar puncture with removal of 10 c.c. of fluid (Babinski's method). Enuresis continues. On April the 20th second lumbar puncture with removal of 10 c.c. of fluid. Enuresis as before. On April the 30th a third lumbar puncture with removal of 10 c.c. Enuresis continued, and the patient was lost sight of.

Case 7.—Girl, aged 10 years, admitted on August the 1st, 1910. Full-term child. Breast-fed for fourteen months. Mother suffers from albuminuria and slight œdema, and has had nocturnal incontinence of urine. Patient has had convulsions, whooping-cough, and asthma, nocturnal enuresis and pollakiuria since birth. Drugs were tried, with no result. Urine examination: Specific gravity 1010, acidity (H^2SO^4) 0·96 per cent., urea 6·3 per cent., uric acid 0·266 per cent., chlorides 2·50 per cent. Fifteen c.c. of artificial serum injected into the epidural space on January the 10th, 1911. Enuresis continues till January the 20th. Subsequently epidural injections were given on the 20th, 25th, February the 1st, 3rd, and 5th, without any improvement. Lumbar puncture was next tried. On February the 20th, 25th, March the 2nd and 12th, from 5 c.c. to 10 c.c. of fluid on each occasion, without producing any effect. Finally renal opotherapy was employed. From March the 15th 10 grm. of fresh sheep kidneys were given daily, and after April the 22nd the enuresis was cured. The patient was kept on the kidney treatment till November the 25th.

Our own observations show that epidural injections of artificial serum often cure enuresis. Cathelin's method acts by suggestion.

Our experience of Babinski's method does not convince us of its value as a cure for nocturnal incontinence of urine. We would suggest that insufficiency of the internal secretion of the kidney causes nocturnal enuresis in a few cases, and that a small class of cases may be cured by the administration of fresh kidney. We would also call attention to the low density of urine, whether it be over-acid or normal in acidity.

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(33) Zanoni.—'Gazz. d. osp.,' 1905, xxvii, p. 1365.
(34) Zubizarreta.—'Sem. med. Arg.,' 1906, xiii, p. 439; 'Arch. Lat. Amer. de Ped.,' 1905, iv, p. 418.

Philadelphia Pediatric Society.

June the 11th, 1912, Theodore Le Boutillier, M.D., President.

Heart Disease.—Dr. John F. Sinclair showed a baby, aged 2 years and 4 months, with congenital heart disease. The child's only illnesses have been three or four attacks of bronchitis. There have never been cyanosis, clubbing of fingers, œdema or hæmorrhages. Dyspnœa has never been marked. The right side of the heart was enlarged and there was a loud systolic murmur. The causes of congenital heart disease are persistence of fœtal conditions, fœtal endocarditis and malformation. In spite of the absence of symptoms in this case the prognosis must be guarded.

Dr. Alfred Hand, jun., showed a girl with acquired heart disease, who was apparently benefited by Nauheim baths.

Dr. Le Boutillier spoke of the contrast between these two murmurs—the loud murmur in the first, and the blowing murmur in the second case.

Infantilism of Herter.—Dr. Maurice Ostheimer showed an Italian girl, born January the 18th, 1905, who was admitted to the University Hospital in January, 1912, aged just 7 years. Parents, sisters and brothers are all well. She was normal until eighteen months old, except for some rickets. She was breast-fed up to twenty-one months, but also had table food. At eighteen months she had whooping cough and has failed to grow much since, though she is mentally quite what other children of seven are. She used to have many attacks of indigestion, probably due to improper food, and

occasionally an attack of diarrhœa. She would at times be very drowsy and become fatigued easily. Upon admission her fontanelle was open, abdomen large, epiphyses enlarged, legs slightly bowed, and marked sweating noted about her head. Her fontanelle is still as large as a dime. She is said to have had an excessive appetite, but this has not been noted in the hospital. She has been very pale at times. There is no enlargement of spleen or liver; and no other physical signs now. Her height on admission was 29 in. and her weight 19⅛ lb.; now she is 30¼ in. high and weighs 21½ lb. Examinations of the fæces recently have not shown the characteristic bacteria of the infantilism of Herter. No excess of fats was found in the fæces. The urine, with a specific gravity of 1020, always shows a trace of albumin, but no casts have been found during the last four months. Her blood on admission gave 58 per cent. hæmoglobin, 3,440,000 reds and 11,000 whites, of which 69 per cent. were polymorphonuclears, 4 per cent. mononuclears, 6 per cent. transitionals and 21 per cent. lymphocytes; on June the 9th, 79 per cent. hæmoglobin, 4,000,000 reds and 8000 whites, of which 36 per cent. were polymorphonuclears, 16 per cent. mononuclears, 2 per cent. transitionals and 46 per cent. lymphocytes. Upon thyroid extract for three months she failed to gain; upon pituitary extract for the past month she has gained two pounds. Clinically the child seems to be a case of Herter's infantilism, now in the stage of gain. Only if she relapses and definite laboratory studies are made can an exact classification be made.

Dr. Howard Childs Carpenter spoke of Dr. Kerley's recent use of thymus extract in a case of arrested development and asked if it had been given in this case.

Dr. Ostheimer replied that thymus had not yet been tried in this case.

Dr. Howard Kennedy Hill said that it was interesting that the number of lymphocytes in the differential blood-counts reported were very high, resembling those found in a child of the size and appearance of this one, rather than of the age of this child.

Osteoma of the Tibia.—Dr. J. Torrance Rugh showed a specimen of osteoma removed from the upper end of the right tibia of a girl, aged 16 years. There was absolutely nothing in the family or personal history which bore a casual relationship to the growth. She had first noticed enlargement just below the knee over a year ago, but had had no discomfort until within the past few months. Pain was entirely absent. On operation the growth was found to be pedunculated, exactly like a head of cauliflower. There were no other growths in any other part of the body.

Philadelphia Pediatric Society Prize.—The President then announced the award of the Philadelphia Pediatric Society Prize of one hundred dollars to Dr. John Albert Kolmer for his essay entitled "Studies in Diphtheria."

Leucocytic Inclusion Bodies in Scarlet Fever.—Dr. Kolmer read an interesting paper showing that the leucocytic inclusion bodies were found in many other conditions besides scarlet fever. His investigations embrace a large number of cases of scarlet fever, diphtheria and other conditions.

Retroperitoneal Lympho-sarcoma.—Dr. Hill reported a case in an Italian boy, aged 6 years, following a kick in the abdomen two months before. Exploratory operation showed an inoperable retroperitoneal sarcoma, and Coley's fluid was used, beginning with one sixteenth of a drop and increasing to two-drop doses. Marked leucocytosis was noted before and

after the injections, with fairly normal differential count. The tumour gradually increased in size and death occurred in two months.

Dr. F. B. Jacobs said that this was the first case in which he had used Coley's fluid. The only true reaction noted was after the injection of two drops. At autopsy much bloody fluid was found in the abdominal cavity. Dr. Jacobs wondered whether this accumulation of fluid could have been due to the disintegration of the tumour produced by Coley's fluid, the absorption of which possibly killed the boy. He quoted extensively from an article by Dr. J. Dutton Steele, who reported sixty-one cases of retroperitoneal lympho-sarcoma; they were quite common under ten years of age and more frequent in males than in females, and on the right side rather than on the left. In most cases death occurred within eight months. This boy passed very little urine—five to seven ounces a day.

Dr. J. Norman Henry referred to two cases which he had treated last winter without success in the Pennsylvania Hospital. One was a case of mediastinal sarcoma, inoperable, producing wide-spread pressure symptoms. Injection of Coley's fluid directly into the tumour produced marked reaction. The mass became softer at the site of the injection and the area of dulness seemed to be diminishing, but treatment was abandoned at the patient's request because of the great prostration after the injections. The second case was acute lymphatic leukæmia with a large lympho-sarcomatous mass in the mediastinum, found at autopsy. Again Coley's fluid did no good.

Dr. W. L. Lee reported a case of osteo-sarcoma of the lower jaw in the service of Dr. Gibbon in the Pennsylvania Hospital, which had recurred after thorough removal and then entirely disappeared when Coley's fluid was given. There was no further recurrence at the end of one year. A second case of sarcoma of the thigh, also in Dr. Gibbon's service, was reported, in which, after removal of the tumour, the wound became infected with streptococci. Here, again, there was no recurrence after one year.

Hyperpyrexia.—Dr. Harry Lowenburg reported a case in which the rectal temperature, as noted by two thermometers, was 108·3° F. This occurred in a marasmic infant of seven months, after an attack of diarrhœa, from which the baby had recovered. Weight was 16 lb. Three days before death coryza, cough and fever were noted. On the third day convulsions occurred, with unconsciousness and the temperature above noted. All treatment seemed of no avail. Autopsy was not permitted.

Massage Ball for Constipation in Infants.—Dr. Lowenburg also exhibited a massage ball to be used in the treatment of constipation in infants and children. He has them made in two sizes, one weighing a little less than a pound, the other weighing two pounds. They are of iron, covered with leather, and resemble a baseball. The mother or nurse rolls the balls over the course of the colon, using no other pressure than their own weight. This is done for about five minutes night and morning. After this they are rolled in a circular fashion over the small intestine for one or two minutes. Dr. Lowenburg found excellent results from these balls after all other things had failed in cases of obstinate constipation. Older children enjoyed using these balls, playing with them.

Dr. Le Boutillier asked whether this was any better than proper colonic massage, deep massage, properly carried out, over the colon. He has had very good results with colonic massage when it is properly given.

Dr. Lowenburg answered that he found that the mothers would not give proper colonic massage and that he had devised this ball on that account.

Abstracts from Current Literature.

Medicine.

Tuberculosis in infancy and childhood (*'Johns Hopkins Hosp. Bull.,'* 1912, xxiii, *p.* 113).—**H. Koplik** states that one cannot say that infants are "predisposed" to tuberculosis any more than they are to measles or diphtheria, but one can say that they are in a position more than anyone else to be exposed to infection, by crawling about the floor and by putting things in their mouths. In very young infants the tuberculous infection will run an acute course, in others a protracted course (scrofulosis) and in older children the course of the disease will approach the forms seen in the adult. In the child infected within the sixth year cavity formation does not occur owing to the rapid course of the disease. In Koplik's opinion, infection through tuberculous milk—*i. e.* not milk containing human tubercle bacilli, but milk from tuberculous cows—is rare. As first pointed out by Weigert, a striking peculiarity of the pathological anatomy in infantile tuberculosis is the preponderating involvement of the lymph-nodes, especially those of the lungs. The meningitic form of the disease occurred in 75 per cent. of Koplik's cases, but it must not be forgotten that a large number of cases of meningitis are really terminal manifestations of a focus of tuberculosis long dormant; in many cases of bone tuberculosis meningitis was the terminal stage of the disease. He regards a pleurisy as tuberculous whose onset is not stormy, though it may be acute or subacute, in which the temperature is not very high—103° F.—in which the effusion is clear and absolutely free from organisms, in which there is a loss of flesh and strength, a history of tuberculosis in the vicinity of the patient and a positive reaction to tuberculin. Koplik agrees with Escherich that scrofulosis is a form of infantile tuberculosis, which develops in a lymphatic constitution a tendency from earliest infancy to a hyperplasia of adenoid tissue (*cf.* "What is Scrofula?" British Journal of Children's Diseases, 1910, vii, *p.* 39).

J. E. Bullock.

The diagnostic and prognostic value of tuberculin in infants (*'Thèses de Paris,'* 1911–12, *No.* 352).—**C. Daniel.**—In 436 children not over two years suffering from various diseases in whom the intra-dermo-reaction was used, 356 were negative and 80 positive. In infants under 1 year, 256 were negative, among whom the mortality was 47·8 per cent., and 37 were positive, with a mortality of 81·08 per cent. In infants from one to two years, 100 were negative, among whom the mortality was 25 per cent., and 41 were positive, with a mortality of 51·2 per cent. The author's conclusions are as follows: (1) The intra-dermo-reaction has a great diagnostic value in children under two years of age, as is proved by the concordance of its results with clinical and necropsy findings. This is particularly true of positive reactions. (2) The reaction retains its value until a very advanced stage of the disease, and much longer than in the adult. (3) Children suffering from tuberculous meningitis almost always react, at least at the onset, since out of 20 cases 17 were positive, and most of these were so three, four or five days before death. (4) Infants giving a positive reaction generally belong to a tuberculous stock, and have been contaminated by living with their sick relatives. (5) The proportion of positive reactions increases from birth up to two years. (6) A negative reaction in a defi-

nitely tuberculous infant indicates a fatal issue within a brief period. (7) A positive reaction is of very grave prognosis in infants aged from one to two years, and is almost invariably fatal in children under one year. The thesis contains the histories of 94 cases observed in Hutinel's service at the Hôpital des Enfants Malades in children aged from three weeks to two years. J. D. Rolleston.

Examination of children of tuberculous parents (*'New York Med. Journ.,'* 1912, I, *p.* 1323).—**Charlotte Blum,** examining 196 children, one or both of whose parents were suffering from tuberculosis, found that 40 (20·4 per cent.) were infected. Reginald Miller.

The physical signs of pulmonary tuberculosis caused by nasal stenosis (*'Med. Record,'* 1912, II, *p.* 202).—**Mary Lapham** points out that a bronchitis of the apex may be due simply to nasal stenosis and that symptoms of pulmonary tuberculosis may follow the same cause. She describes two cases bearing out her contention in which rectification of the nasal obstruction resulted in the disappearance of the lung condition. She believes that the air-passages and alveoli in the apex are more difficult to fill than those of the rest of the lung, because there are no muscles of inspiration and no chest-wall to expand in that region. Macleod Yearsley.

Complications of tracheo-bronchial adenopathy (*'Arch. de Méd. des enf.,'* 1912, XV, *p.* 193).—**F. Maillet** divides these into a serious group, and into a group in which the effects are transitory; the latter concern pressure symptoms on the neighbouring nerves and vessels, and are usually due to simple gland enlargement. The serious symptoms follow tuberculous gland enlargement, and are associated with an extension of disease to neighbouring organs. J. E. Bullock.

Slowing of the respiration in tracheo-bronchial adenopathy (*'Rev. d'hyg. et de méd. inf.,'* 1911, XV, *p.* 419).—**C. Aubertin** describes the case of a child, aged 13 years, in whom the following symptoms presented themselves: (1) Respirations six to eight per minute, regular, permanent and painless; (2) precordial pains in the left nipple; (3) hiccough, especially after eating; (4) a chain of enlarged glands on the left side, shown by radioscopy. F. R. B. Atkinson.

Sudden death from tuberculous tracheo-bronchial adenopathy (*'Osp. d. Bamb. d. Milan.,'* 1912, I, *p.* 32).—**I. Cacciani** records a case in a boy, aged 3 years, admitted to hospital for bronchitis. Ten days after admission the child was suddenly seized with violent dyspnœa, the colour of the face and hands were blue and the pulse was imperceptible. In spite of injections of camphorated oil and oxygen inhalations death soon occurred. In addition to enlargement of the thymus the necropsy showed diffuse tuberculosis of the glands, lungs and spleen. J. D. Rolleston.

Perforation of trachea by tuberculous lymphatic gland (*'Jahrb. f. Kinderh.,'* 1911, LXXIII, *p.* 734).—**H. Koch.**—A previously healthy boy, aged 6 years, fell ill with headache, cough and hoarseness. The next day severe dyspnœa necessitated intubation. In 48 hours the tube was removed; 24 hours later there was a return of severe dyspnœa, which intubation, followed by tracheotomy, failed to relieve. At the necropsy the large bronchi were

found blocked by carious masses due to perforation of the trachea by a carious lymphatic gland. **Pollak** mentioned a similar case in which recovery followed tracheotomy, the tuberculous gland being coughed out through the tracheotomy wound. J. D. Rolleston.

Erythema nodosum and tuberculous meningitis (*'Gaz. des Hôp.,'* 1912, lxxxv, *p.* 125).—**A. Sézary** draws attention to the frequency of tuberculous meningitis in children who have recently had erythema nodosum. His own case was a girl, aged 8 years, who had an attack of erythema nodosum in February, when she presented signs of enlargement of the tracheo-brachial glands. After an interval of four months' good health, tuberculous meningitis developed and death took place in August. Sézary quotes similar cases from literature of tuberculous meningitis following erythema nodosum and also of the coincidence of the two phenomena.
J. D. Rolleston.

Is phlyctenulosis a manifestation of tuberculosis? (*'Long Island Med. Journ.,'* 1912, vi, *p.* 208).—**L. C. Ager** believes (1) that tuberculous infection of the eye, particularly in the young, is much more common than has been supposed; (2) if phlyctenulosis is not the direct product of a tuberculous infection, there is reason for supposing that there is a causative relation between the two; (3) all children with phlyctenulosis should be thoroughly examined for tuberculosis and treated accordingly.
F. R. B. Atkinson.

Tuberculosis of the mesenteric glands in children; its nature and treatment (*'Lancet,'* 1912, i, *p.* 426).—**Edred M. Corner** asserts that in practically every child patient submitted to an abdominal operation there will be found evidence of tuberculous mesenteric glands. He maintains that owing to the difference in muscular structure of the small and large intestines there occurs in the ileo-cæcal region a stagnation of the intestinal contents. This pause takes place in a warm, slightly alkaline medium, which is an excellent place for the multiplication of various micro-organisms. To protect the body against this menace a large amount of lymphoid tissue has been formed in the ileo-cæcal region. Hence the function of the appendix. There must be a continuous "ileo-cæcal" strife between organisms and the lymphoid tissue. And so long as the lymphoid tissue prevails the host is in good health. If the micro-organisms get the best of the ileo-cæcal strife the host is in bad health, and may suffer from appendicitis, colitis, or infected glands in the mesentery. From the above it is argued that the great entrance of tuberculosis from the intestine to the body is by the lymphatics, in the ileo-cæcal region. In the treatment of these cases the author advises removal of the appendix followed by a course of treatment for tuberculosis on generally recognised lines. J. Allan.

Clinical significance of the deglutition click or fremitus (*'Amer. Journ. Dis. Child.,'* 1912, iv, *p.* 7).—**L. Ott** has found of value in diagnosis what he terms the deglutition click. The child's chest is auscultated while feeding and the sound made by the swallowing movements compared over the various parts of the lungs. It is found to be perceptibly increased over consolidated areas. He describes it as a sign of value in very young children whose vocal resonance cannot be tested in the ordinary way.
Reginald Miller.

On the presence and distribution of carbon dust in the lungs of children (*'Riv. di clin. Pediat.,'* 1912, x, *p.* 430).—**L. Pollini** finds that in children under the age of 45 days there is a complete absence of carbon in the lungs, while merely traces are found from $1\frac{1}{2}$ to 8 months. From 8 months onward there is found an appreciable quantity, which generally increases with age, and is distributed equally over both lungs, but is more abundant in the upper lobes. The quantity present is the same in children reared in a town like Milan or in the country. VINCENT DICKINSON.

The diagnosis and prognosis of infantile pneumonia (*'Progrès méd.,'* 1912, XL, *p.* 145).—**G. Mouriquand** draws attention to the localisation of the lesion; the later it takes place the more favourable is the prognosis. Out of 240 cases under the observation of the author and Prof. Weill, there was no localisation found in 40 cases; in 82 it was in the left base, in 64 at the right apex, in 39 in the right base, and in 15 at the left apex. Of the 82 cases at the left base, 29·5 per cent. had complications, of the 64 cases of the right apex only 7·6 per cent. had complications, of 39 cases of the right base 28·2 per cent., and of 25 cases at the left apex 60 per cent. had complications; fortunately this latter position is rarely attacked. Radioscopy showed that the lesion at the apex took a triangular shape with its base in the axilla; this triangle appeared at the onset, became diffuse during the height of the disease, and reappeared after the crisis. Axillary auscultation demonstrates the presence of this triangle which is not present in broncho-pneumonia. VINCENT DICKINSON.

Prolonged pseudo-tuberculous broncho-pneumonia in children (*'Thèses de Paris,'* 1911-12, *No.* 435).—**Mlle. S. Goldenfann** discusses the forms of broncho-pneumonia of subacute and protracted course, of which the physical signs and symptoms, especially emaciation, prolonged fever and cachexia, so closely resemble tuberculous broncho-pneumonia that this disease is usually diagnosed. The ætiology is the same as that of ordinary broncho-pneumonia. The disease is most frequent after acute infections, especially measles and whooping-cough. It may last several months, and be complicated by empyema and bronchial dilatation. The diagnosis is made by the absence of tuberculous antecedents, a negative cuti-reaction, and the absence of tubercle bacilli in the sputum, which may be obtained by various methods, especially gastric lavage. The prognosis, though grave, is less so than that of tuberculosis. Recovery may take place when a fresh-air cure is adopted early. Necropsies show an absence of naked-eye or microscopical lesions of tuberculosis, a localisation of the lesions in a pseudo-lobar focus, a cornification of the lung parenchyma and bronchial dilatation. The thesis contains the histories of seven cases, five of which are original, in children aged from fifteen months to eight years. J. D. ROLLESTON.

Non-diphtheritic membranous angina in broncho-pneumonia (*'Centralbl. f. Laryn.,'* 1912, XXXVIII, *p.* 419).—**Romeo.**—A child aged 8 years on the fourth day of broncho-pneumonia developed yellowish white deposits on the tonsils, accompanied by hoarseness and dyspnœal attacks. Agar and gelatin cultures showed the presence of two kinds of colonies, one the ordinary saprophytes of the mouth and the other pneumococci. No diphtheria bacilli were present. J. D. ROLLESTON.

Acute dilatation of the stomach complicating pneumonia in a child (*'Am. Journ. Obst.,'* 1912, LXVI, *p.* 132).—**L. Louria** describes a case of a boy, aged 2 years, in which these two conditions were associated. The

child recovered. The symptoms of the condition are: (1) Sudden projectile vomiting, which may be absent; (2) great abdominal pain; (3) distension, rapid and mainly epigastric, disappearing with gastric lavage; (4) collapse; (5) usually constipation, but occasionally diarrhœa; (6) peristalsis visible over the epigastric area, and often succussion splash. The condition may be confounded with intestinal obstruction and with general peritonitis. The treatment consists in passing a stomach-tube and employing gastric lavage with normal saline. Nothing should be given by the mouth for several days, nutrient enemata being employed instead. Strychnine and eserine are useful drugs hypodermically. F. R. B. Atkinson.

Increased subclavicular expansion in pleural effusion in children (*'Lyon Méd.,'* 1912, cxviii, *p.* 945).—**MM. Weill** and **Gardère,** comparing their clinical observations with radioscopy, state that in pneumonia there is invariably a marked diminution of subclavicular inspiratory expansion. They have at times noticed the absence of this symptom during the course of affections which clinically resemble pneumonia. For example a child admitted with high temperature, dyspnœa without cyanosis or recession had slight dulness, tubular breathing, a few *râles* at one base; the subclavicular expansion, however, was not diminished, but rather increased. Radioscopy shows that such cases were really pleural effusions. Recently a child was admitted with similar symptoms and labial herpes, the right base was dull, there was tubular breathing and *râles*, the expansion of the right subclavicular region was increased. Radioscopy showed the right lung clear at its upper part; the lower part, on the contrary, was the seat of a marked shadow reaching as far as the diaphragm and stretching laterally as far as the costal border. The characteristic triangle of pneumonia was absent. Exploratory puncture drew off fibrino-purulent fluid. The child presented all the general signs of pneumococcal infection, but instead of the lung the pleura was affected. These facts show the necessity of carefully examining the subclavicular expansion in children with signs of an acute pulmonary affection. The clinical diagnosis between pleurisy and pneumonia is sometimes difficult; percussion is much more delicate in the child, and an abundant effusion is necessary to produce decided dulness. Moreover, breath-sounds may be heard in a child in spite of the presence of fluid, and *râles* are almost always heard in the course of a pleurisy of moderate amount. The presence of increased subclavicular inspiratory expansion constitutes a valuable sign in favour of the existence of a pleural effusion. Diminution of this expansion is invariable during the course of pneumonia in children, and whenever it is absent it should throw doubt on the diagnosis of pneumonia and suggest the presence of pleural effusion.

Vincent Dickinson.

Empyema in infants (*'Pediatrics,'* 1912, xxiv, *p.* 192).—**F. Huber** describes a case of empyema in an infant 8 weeks old, and analyses 86 other cases. He found 86 cases among a total of 967 children ten years of age and under. Nearly 40 per cent. were fifteen months and under; 24 boys were affected, and 9 girls under fifteen months of age. The mortality was high: 17 died. The author lays stress on the board-like feel, the sense of resistance, flatness, displaced heart, and possibly diminished or absent breathing and voice as valuable diagnostics, especially displacement of the heart. In the infant he considers incision with drainage usually suffices. Narcosis is not necessary. F. R. B. Atkinson.

Empyema of infancy (*'Amer. Journ. Obst.,'* 1912, LXXV, *p.* 898).—**S. A. Blauner** describes three cases of this disease in children, aged 5 months, 10 months, and 9 months respectively, and draws attention to the importance of flatness on percussion as a diagnostic; in fact he believes that this one sign is quite sufficient, regardless of the absence of other symptoms, to warrant exploratory puncture. F. R. B. ATKINSON.

Surgery.

Gliomata and cerebral injuries (*'Gaz. des Hôp.,'* 1911, LXXXIV, *p.* 1459).—**L. Babonneix** describes numerous cases from the literature in which gliomata followed injury, and does not believe that the result is a fortuitous occurrence. He considers that Virchow's theory best explains their presence, viz. that the traumatism has caused hyperæmia and capillary hæmorrhages which irritate the neighbouring neuroglia and cause proliferation of the same. F. R. B. ATKINSON.

A case of chylangiomata (*'Med. Record,'* 1911, II, *p.* 676).—**C. P. Farnsworth** and **W. T. Lindsay** describe the case of a boy, aged 7 years, operated upon for ascites, pain in the abdomen and vomiting, and other symptoms of intestinal obstruction. On performing laparotomy, four cysts were found at the junction of the jejunum and ileum causing complete obstruction. The fluid contained a large amount of fat-cells, a few leucocytes and red corpuscles. The child died forty-five hours after operation. F. R. B. ATKINSON.

Sarcoma causing chronic intussusception (*'Clin. Journ.,'* 1912, XL, *p.* 193).—**D'Arcy Power** describes the case of a boy, aged $5\frac{1}{2}$ years, in whom he removed an irreducible intussusception by excision. A month afterwards a lump was found inside the right nipple, which on removal was found to be a round-celled sarcoma. Re-examination of the excised portion of the bowel revealed the same condition. The author could only find one similar case in the literature (Meyer, W., *'Annals of Surgery,'* 1898, XXVIII, *p.* 260). There had been no return in the author's case at the date of publication nine months after operation. F. R. B. ATKINSON.

Sarcoma of the pelvis in children (*'Arch. f. Kinderheilk.,'* 1912, LVIII, *p.* 160).—**H. Alexander** reports on 18 cases of this disease from the literature. The cases are of two kinds—myelogenous and periosteal; pulsating sarcomata had never been observed. The ages of the 18 cases ranged from birth to sixteen years; 6 were males, 12 females. *Causes*: Trauma was noticed in three cases. *Symptoms*: Pain is usually the first symptom; the tumour is usually too deep to be felt at first. Intestinal and bladder troubles are generally of early date, and œdema of the lower extremities appears later. Fever appears later and then cachexia. Metastases are most frequent in the lungs. Death on the average occurs in sixteen months. The only treatment is removal, which has proved successful in Bartscher's case (*'Monatsschr. f. Geburtskunde,'* 1861). There is a complete bibliography. F. R. B. ATKINSON.

Sarcoma of the ovary in a girl, aged $14\frac{1}{2}$ years (*'Prag. med. Woch.,'* 1912, XXXVII, p. 79).—**Gross** had a girl under his care with three months' amenorrhœa, enlargement of the abdomen and a rapidly growing tumour.

The diagnosis of left ovarian tumour was made and operation carried out. Four months later the patient was in good health: menstruation had been regular. According to Zangemeister, there are two ages of predilection for these tumours—at puberty, and at the climacteric. M. D. Eder.

Sarcoma of the upper jaw in a baby, aged 21 months (*'Journ. de Méd. de Bord.,'* 1911, xli, *p.* 824.)—**H. L. Rocher** relates the case of a healthy female child, with a good family history, who, when twenty-one months old, was noticed to have developed a swelling in the left temporal region and in the posterior part of the palate; this increased and the child wasted; later exophthalmos of the left eye appeared. The tumour was almost fluctuating and about the size of a hen's egg, covered with dilated veins. The nasal fossa was occupied by the swelling, and the hard palate was destroyed on the left side. In spite of treatment by radium the tumour continued to develop rapidly, and the child died quite suddenly from syncope while at play. J. Porter Parkinson.

Acute osteomyelitis of the superior maxilla in sucklings (*'Arch. de méd. des enf.,'* 1912, xv, *p.* 39).—**R. Français** describes three cases of this disease in infants of five months, twenty days, and a few days of age respectively. The first case was bilateral and recovered, the second and third unilateral: the former recovered and the latter died. A consideration of the twenty-four cases published in the literature shows that the disease is one of early life, and may be caused by trauma, erosions and ulcerations of the nasal and buccal mucous membrane, syphilis, tuberculosis or other infections. The presence of germs in the mouth and gums seems to be the chief reason for the localisation of the disease at this age in the superior maxilla. The symptoms may appear suddenly with fever and convulsions, or the disease may come on insidiously with swelling of the alveolar border between the premolar and the lateral incisor teeth, and the formation of an abscess is not long delayed. In other cases the swelling begins in the canine fossa and gives rise to swelling and chemosis of the orbit. The palatine arch and mucous membrane are not affected. The prognosis is bad; 30 per cent. of cases died, and death is usually due to septicæmia. The treatment consists in opening the abscess and removing the necrosed parts. F. R. B. Atkinson.

Mercurial necrosis of the maxilla in a girl, aged 5 years (*'Journ. de Méd. de Bordeaux,'* 1912, xxiv, *p.* 87).—**H. L. Rocher** reports that after the use of an ointment containing mercury on a large burn for three months a mercurial stomatitis began, accompanied by a pseudo-membrane and swelling of the right cheek, with some trismus, salivation and intense fœtor of the breath. Two large sequestra came away with some of the milk teeth. The author considers that very toxic substances were formed by the combination of the mercury with iodoform and iodol. A fibrous scar was left in the right cheek, which had to be removed before mastication could be properly performed. J. Porter Parkinson.

Necrosis of superior maxilla in measles (*'Gazz. d. osp.,'* 1912, xxxiii, *p.* 521).—**F. Bindi.**—A girl, aged 6 years, had an attack of measles followed by broncho-pneumonia. During resolution she developed necrosis of half the right upper jaw, preceded by gangrene of the gingival mucous membrane, the alveoli of the second incisor, canine, two premolars, and first molar being

affected. The sequestrum was removed and recovery took place. Bindi regards the onset of the permanent dentition as the cause of the localisation of the gangrene. Gangrenous processes after measles are not uncommon (*cf.* British Journal of Children's Diseases, 1908, v, *p.* 74), but necrosis of bone is very rare. Bindi could not find a record of a similar case in literature.

J. D. Rolleston.

Acute epiphysitis in the new-born (*'Austr. Med. Gaz.,'* 1911, xxx, *p.* 450).—**J. A. Watt** and **W. S. Sweet** narrate the case of a baby, aged 11 days, with the above condition of the left wrist. Pus was evacuated and improvement set in. The mode of infection was probably through the eyes, as the same form of diplococcus was found in the secretion from the eyes and the pus in the radius. A loose lateral incisor tooth was removed when the child was nineteen days old.

F. R. B. Atkinson.

Osteogenesis imperfecta (*'Nederland. Tijd. v. Geneesk.,'* 1912, ii, *p.* 310).—**R. A. Tange** and **M. H. J. Groenendijk** allude to the case recently reported by Heukelom and Kamberg (*vide* British Journal of Children's Diseases, 1912, ix, *p.* 85), and report a case in a male infant, the second child of healthy parents. At birth its limbs were abnormally short in relation to the trunk as in achondroplasia, and crepitus could be felt in the left radius and several ribs. When one year old it measured 1 ft. 10 in. with the legs fully extended, and weighed 13 lb., the same as it did at six months. Movement of the limbs was still very slight. The skull was still soft, and the fontanelle widely open. Sweating was marked. X rays showed fractures in ribs, left radius, femora and tibiæ.

J. D. Rolleston.

Case of osteogenesis imperfecta (*'Austral. Med. Gaz.,'* 1912, xxxi, *p.* 565).—**R. B. Wade** describes this rare condition in a child aged 3 months, in whom twelve bones in all were fractured. In about 15 per cent. of the recorded cases heredity is a factor. The greatest number of fractures in one case is reported by Chaussier—113 in a new-born child. Repair of the fractures is usually good.

F. R. B. Atkinson.

Osteogenesis imperfecta (*'Jahrb. f. Kinderheilk.,'* 1912, lxxvi, *p.* 40).—**R. Preiswerk** describes the case of a girl suffering from this condition, and also the history of other cases culled from the literature.

F. R. B. Atkinson.

Osteopsathyrosis (*'Jahrb. f. Kinderheilk.,'* 1912, lxxvii, *p.* 30).—**L. Scholz** describes a case of a boy, aged 1½ years, in whom fractures of the thigh, one arm and clavicle had occurred. He found treatment by strontium, as recommended by Lehnerdt, valueless.

F. R. B. Atkinson.

Fragilitas ossium (*'Pediatrics,'* 1912, xxiv, *p.* 85).—**W. P. Coues** records a case in a boy, aged 9 years, who since the age of two years had had the following fractures: (1) Of tibia due to fall from tree; (2) of femur due to slipping on floor; (3) of both bones of leg caused by fall from wall; (4) of both bones of right arm caused by fall on stairs; (5) of both bones of left arm through stumbling over wire; (6) of phalanx near joint from another boy twisting his fingers; (7) of metacarpal due to blow with broom; (8) separation of lower epiphysis of fibula due to fall. The sclerotics were of

a slaty blue colour. Coves had heard of a family on Cape Cod who had very brittle bones and the same slaty-blue colour of sclerotics.

J. D. Rolleston.

Tuberculous disease of the bones and joints: present position of treatment in London (*'Lancet,'* 1912, i, *p.* 424).—**R. C. Elmslie** points to the great prevalence of these conditions both in England and Germany, and gives statistical proof that in this country tuberculous disease of the bones and joints is the most important cause of crippling in childhood. The principles of treatment are (1) early diagnosis; (2) exact diagnosis; including routine radiography, so that the cases of focal disease in the bone capable of radical treatment may not be missed; (3) correction of any deformity that has already arisen; (4) rest and fixation in that position which will be the best if ankylosis supervenes; (5) the treatment of abscesses by means as conservative as possible, postponing operative treatment and using aspiration in preference to incision; (6) after-treatment by fixation or support as long as is necessary to prevent subsequent contracture. The author gives a brief general survey of the means and channels by which such treatment is being at present carried out, and in conclusion he briefly states the requirements necessary for the better control of such cases. These are as follows: (1) increase in the accommodation for in-patient treatment of children suffering from tuberculous disease of the bones and joints, preferably in special hospitals situated in the country close to London; (2) the levelling-up of these hospitals by having them staffed and supervised by men who will make a special study of the treatment of tuberculous joints, not only from the point of view of saving the child's life, but also from the point of view of preventing deformity; (3) the provision of extensive open-air wards; (4) provision for treatment for an indefinite period, and for children of all ages, including infants; (5) arrangement for the education of the children whilst in hospital; (6) proper arrangemements for the after-supervision in an out-patient department and in the home. J. Allan.

Dislocation of the hip caused by infectious arthritis (*'Therap. Gaz.,'* 1912, xxxvi, *p.* 249).—**J. H. Shaw.**—A girl, aged 8 years, after diphtheria followed by measles was found to be suffering from an inflamed hip. X-ray examination revealed disorganisation of the roof of the acetabulum and head of the femur. The treatment, consisting of daily bathing with massage and auto-resisting exercises, considerably improved the condition. F. R. B. Atkinson.

Acute arthritis (*'Clin. Journ.,'* 1912, xxxix, *p.* 305). **W. Hale White,** in the course of an interesting lecture on the acute arthritis of childhood, gives an account of an infection of a hip-joint by *B. pyocyaneus* in a child, aged 5 years. The illness was characterised by a very sudden onset and the rapid development of convulsions and coma. The arthritic symptoms were ill-marked at first. Death took place from pyæmic pulmonary abscesses. Post mortem, in addition to the affection of the joint which had been opened, there was acute osteomyelitis of the shaft of the femur. No aperture could be found to explain the infection of the joint from the bone.

Reginald Miller.

Pseudo-tuberculous arthritis due to rheumatism (*'La med. de los niños.,'* 1912, xiii, *p.* 3).—**Guasch** describes the case of a girl, aged 10

years, who had presented the classical signs of hip-joint disease, lumbar lordosis, apparent lengthening of the left leg, some pain over the head of the femur on pressure and on movement, and limitation of movement. The symptoms were, however, too severe for the length of time the disease had lasted; the patient was treated for rheumatism. Five physicians had previously diagnosed tuberculous disease and had advised absolute rest; fifteen doctors subsequently had agreed in this diagnosis. Guasch got the opinions of three more, whose diagnoses were coxalgia, Pott's disease, traumatic arthritis. The symptoms disappeared under salicylates and there was later on pain in the left tibio-tarsal joint, which got better under the same treatment. A year later the patient was found to be perfectly well. Mono-articular rheumatism is so frequent in children that it should be always carefully considered and excluded. M. D. Eder.

Acute suppurative arthritis and bursitis in children (*'La Pediatria,'* 1912, xx, *p.* 210).—**V. Brun** contributes a paper on this subject to which little attention has hitherto been paid. (1) *Arthritis.*—The local causes are skin lesions, adhesions, eczema, intertrigo, etc.; the general causes, acute infectious conditions. Bacteriology: *Staphylococcus pyogenes aureus* occurred 12 times, streptococcus 13, diplococcus 15, gonococcus once. Each of these forms has characteristic clinical features, *e. g.* staphylococcal arthritis begins gradually with slight heat and swelling of the joint, is rarely complicated by cartilaginous changes, and gets well rapidly with surgical treatment. Streptococcal arthritis, on the other hand, manifests a peculiar malignity, beginning suddenly with fever, swelling, pain, and general constitutional disturbance. The diplococcal form is the most benign, and may be primary or follow an infection of the lungs or ear. Children have a special receptivity with regard to the diplococcus, and this is demonstrated in the majority of cases of purulent otitis media in which this organism is found. This receptivity is also shown, besides synovial localisation, in affections of the large serous cavities and mucous surfaces. The affection was secondary in seven out of fifteen of the author's cases and developed during convalescence. The onset is gradual and acute manifestations are absent. The pus is abundant, fluid, and not infrequently sterile, the diplococcus having already lost its virulence. Blenorrhagic arthritis has two modes of entry; in the newly born it follows, as a rule, a purulent gonococcal conjunctivitis of maternal origin; in later childhood it is secondary to a genital affection, for the most part vulvo-vaginitis, since females are affected in about 95 per cent. of the cases. The affection is almost always monarticular. Usually in the diplococcal and gonococcal forms the synovial membrane alone is affected, rarely the articular cartilage and hardly ever the osseous epiphysis, and even then sequestra do not form. In streptococcal forms, on the other hand, in more than half the cases the cartilages and bones are affected by lesions which are of no great depth but of large area, so that the articular head is almost entirely denuded of cartilage and rough with small sequestra. In staphylococcal forms implication of the head of the bones is also frequent, but to a less extent; the severity of the attack being less, cure is rapid and complete. The author's statistics show the seat of the disease to have been the shoulder in 7, elbow in 2, wrist in 2, hip in 13, knee in 15, foot in 3, sterno-clavicular joint in 1. Diplococcal infections attack the shoulder and knee equally. Prognosis depends on several factors; the pathogenic agent, the presence of osseous lesions, the number of joints affected, the general condition of the patient and the promptness of surgical intervention. The gravest form is

the streptococcal, which is prone to attack the bones; multiplicity of lesions does not seriously affect the prognosis, except when accompanied by general depression. Early surgical intervention is of capital importance. Treatment consists in arthrotomy. Cure generally results without ankylosis. (2) *Acute purulent bursitis.*—Occurs specially in later childhood. In 10 cases collected by the author, 2 were in infants and the rest in children from 3 to 11 years. The seat was single in 9 cases, multiple only in 1, which was an infant of 3 months with inflammation of the right trochanteric, the right subcrural of the knee and the left temporo-maxillary bursæ in the rest; the shoulder was affected in 2 cases, the hip in 4, and the knee in 3. Examination of the pus showed *Staphylococcus aureus* in 7 cases, diplococcus in 2, gonococcus in 1. Bursitis of the knee and hip often simulate cold tuberculous abscess; bursitis of the hip especially may simulate tuberculous coxitis, from which it is distinguished by the absence of osseous changes, and especially of pain produced by anterior pressure on the head of the femur or blows on the head. VINCENT DICKINSON.

Treatment.

Involution of the thymus by the X ray (*'Arch. of Pediat.,'* 1911, XXVIII, *p.* 810).—**A. Friedlander** experimented on rabbits, with the following results: (1) It is possible to induce involution of the thymus by the X rays, and also in cases of status lymphaticus to reduce the size of the spleen and of the lymph-nodes (human subject reported in 1907). (2) By variation in the number and frequency of the X-ray exposures it is possible to bring about involution with varying degrees of rapidity; hence when the symptoms of thymic asthma are urgent, the exposures can be given on successive days. (3) It is possible to induce any degree of fibrosis of the thymus from the very slightest to absolutely complete sclerosis. (4) The dosage of X ray can be regulated according to the necessities of the case. (5) There is no danger to individuals from the use of the rays. F. R. B. ATKINSON.

Hypertrophied thymus treated by radio-therapy (*'La Clin. inf.,'* 1912, X, *p.* 269).—**MM. L. Ribadeau-Dumas** and **A. Weil** report the case of a girl, aged 2 months, brought to the *crèche* with bronchitis and signs of enlarged thymus, viz. stridor, paroxysms of suffocation with cyanosis, deformity of thorax and percussion signs. To differentiate the condition from mediastinal adenopathy a series of radioscopic examinations were undertaken in various positions. The screen showed above the heart, and merging into it, a shadow extending towards the left of the sterno-vertebral shadow This shadow, which was wide, homogeneous, with defined borders, had all the characters of the thymic shadow of D'Oelsnitz and was easily distinguished from shadows caused by enlarged glands. The puny condition of the infant led the authors to try radio-therapy as an alternative to operation. The effects were remarkable. After the second sitting the attacks of dyspnœa no longer occurred, the stridor was less marked and disappeared after the third irradiation. Radiography showed considerable diminution of the thymic shadow. Feeble doses were used, 1½ H, 5 H. Unfortunately the infant contracted measles, to which she succumbed. At the autopsy sclerotic atrophy of the thymus was found, which, by comparison with the radioscopic images observed during life, seemed attributable to the action of the rays.
VINCENT DICKINSON.

Röntgentherapy in infantile splenomegaly (*'La Pediatria,'* 1912, xx, *p.* 30).—**G. A. Petrone** and **M. Lo Re** treated a number of cases by X rays which failed to give good results in one case of Leishmaniosis and in one case of pseudo-leukæmic splenic anæmia. During the treatment the size of the spleen and number of leucocytes diminished, but at the same time the general condition became worse and the anæmia more marked. Röntgentherapy, associated with the administration of quinine, gave very good results in a case of enormous malarial splenomegaly, in which the use of quinine and arsenic alone yielded very poor results. Under X-ray treatment carried on for three months, the spleen was reduced almost to its normal size, while the general health improved. At the same time, however, the leucopenia, the number of red blood-corpuscles and amount of hæmoglobin, after slight variations at the commencement of treatment, remained almost stationary, not only during the whole period of irradiation, but some months later. Eight months, however, after the termination of the Röntgentherapy the condition of blood returned almost to normal. The result observed in this case is all the more remarkable in that one had to do with a chronic splenomegaly, in which permanent irreducible lesions had presumably taken place. In four cases of pseudo-leukæmic splenic anæmia (three with leucocytosis and one with an almost normal quantity of white blood-corpuscles), in which the enlargement of the spleen was a conspicuous feature, while the anæmic condition was little marked and the general condition fairly good, except in one case, the X rays was to a certain extent effectual, causing a rapid reduction in the size of the spleen, and improvement in the general condition. In these cases also a diminution of leucocytes was noticed. The red cells and hæmoglobin remained almost stationary in three cases during treatment and for some months after, and only after a considerable time (seven to eight months) had the blood condition returned to normal, while in the other case the number of red cells and to a less degree the amount of hæmoglobin underwent a gradual increase even during treatment. The authors conclude that this treatment is useful in pseudo-leukæmic splenomegaly when it is not very severe, and when the general condition is fairly good, since it reduces the size of the spleen, improves the general health and conduces to recovery. The result in the case of malarial cachexia probably saved the patient from splenectomy. The results in the case of Leishmaniosis were not definite. The treatment should be continued with the hypodermic administration of iron, arsenic, and lecithin.

VINCENT DICKINSON.

Radiotherapy in tuberculous adenopathy (*'La Clin. infant.,'* 1912, x, *p.* 299).—**M. Bruneau de Laborie,** in a communication to the Soc. méd. des Hôp., distinguishes two classes of cases, according as the gland is simply enlarged and rich in lymphoid tissue or has undergone caseous changes and is suppurating or fistulous. In the first condition the gland may disappear after a single application; sometimes, however, the first irradiation causes some increase in volume which diminishes after a second dose. In these simple cases six or seven applications generally bring about a permanent result. When caseation has commenced the result of irradiation is often to cause rapid suppuration. In this case it is better to evacuate the pus while continuing the treatment. Under these conditions the duration of the treatment is increased, but there is a gain in rapidity of cure and in æsthetic result. In tracheo-bronchial adenopathy the paroxysmal cough often disappears after the fourth sitting. Application should be made every fifteen

days, except for tracheo-bronchial glands, where it may be made every eight days alternately to the back and front of the thorax. When the gland is fistulous the author makes two or three applications without a filter; in other cases he uses a layer of aluminium ·5 mm. thick. The dose measured by Sabouraud's pastilles must be at least 4 H units, but less than 5. If after several applications the skin becomes red, treatment is suspended for a month. With these precautions dermatitis does not occur. A localiser of glass or lead protects the neighbouring skin, but it is necessary to have an opening larger than the apparent size of the gland so as to act on the whole of it. A large number of children were among the cases treated.

VINCENT DICKINSON.

Tuberculin in children (*'Arch. de méd. des enfants,'* 1910, XIII, *p.* 744).—**Gourand** finds that the action of tuberculin in children is different from what it is in adults, though the benefit is similar; it requires more care in application. It is more useful in tuberculous glands than in phthisis; in the latter it is often badly borne. The results are very good in skin, joint and bone affections, also in tuberculous peritonitis and in genito-urinary tuberculosis. It may be used in infants so young as eight or ten months. It tends to promote active immunisation, though the power of immunisation is less the younger the child. As young children have been shown not to develop antibodies, tuberculin is chiefly useful when tuberculosis is limited and not virulent. Children bear tuberculin better than adults, so that the treatment may be considered as without danger. The improvement in the general condition, as shown by gain in weight and development, is very marked in infants. Surgery may be preferable in tuberculosis of glands, bones and joints, as the immunising power of tuberculin is weak and the effect is slow.

J. E. BULLOCK.

Treatment of tuberculosis in children by Koch's old tuberculin (*'Jahrb. f. Kinderheilk.,'* 1912, LXXV, *p.* 556.)—**J. Cronquist** states that the main indications before commencing tuberculin treatment are, in the case of the lungs, that the changes have not reached cavitation, though one or two lobes may be affected, the body temperature must be normal, and there must be no kidney affection; to ensure this the urine of each child undergoing tuberculin treatment is examined daily. While acknowledging that most authorities think that after a reaction the last dose should be repeated until no reaction occurs, that is, until the child is immune to this dose, according to his experience it is much better to lower the dose a tenth of that which had caused the reaction, and to raise the following doses more carefully than before; thereby harm is avoided to the child and time saved. The object of treatment is to attain as high a dose as possible without reaction, and to repeat this optimum dose until the tuberculous process is healed. The absence either of a v. Pirquet reaction or of a local reaction is no guide to the optimum dose. For some years he has sought to base the dosage of tuberculin on the anti-tuberculin content of the blood; this has been shown to be directly proportional to the amount of tuberculin injected, and in his opinion is dependent upon the extent and nature of the lung changes; on these premises he justifies the assumption that by evidence of repeated anti-tuberculin content one can arrive at the optimum dose.

J. E. BULLOCK.

Treatment of tuberculous glands of the neck in children (*'Practitioner,'* 1912, LXXXVIII, *p.* 641).—**W. G. Sutcliffe** rightly draws attention

to the desirability of rest in the treatment of this condition until there is definite decrease in their size. He does not find that tuberculin assists in the rate of absorption of the affected glands. He considers $\frac{1}{3000}$ mgrm., increased to $\frac{1}{250000}$ mgrm. after two weeks and given every eight days, is the right dose. The preparation is not stated. He finds tuberculin is of some service after operation, but not until a month has elapsed. The treatment should be continued for three months. The author enters into the surgical treatment at some length. F. R. B. Atkinson.

Adrenalin in the treatment of tuberculosis (*'Paris méd.,'* 1911 12, I, *p.* 246).—**E. Sergent** recommends adrenalin in the defective calcification of tuberculous children, which accompanies dental caries and phosphaturia (*cf.* "Recalcification in Children," British Journal of Children's Diseases, 1911, VIII, *p.* 476). It is most useful in peritoneal and bone tuberculosis, especially Pott's disease. J. E. Bullock.

The management of asthma in children (*'Amer. Journ. Med. Sci.,'* 1912, I, *p.* 836).—**H. M. McClanahan** divides the treatment into two headings: (1) The care and treatment of the child during the intervals: A thorough investigation should be made of the whole body and the history of the child and family should be noted. The feet and legs should be kept warm and dry and the chest and neck protected to prevent cold. A low meat diet with a high vegetable proteid is the best diet. In certain cases a change of climate is necessary. If anæmia or rheumatism be present, these should receive appropriate treatment. Daily exercises in pulmonary gymnastic exercises are invaluable, especial stress being laid on the importance of complete expiration. If catarrhal bronchitis exists, the author finds sodium iodide the best remedy. (2) Treatment of the paroxysm: The room should be warm, and air currents avoided. If the bowels are distended with gas a warm enema is indicated, and an emetic if the paroxysm occur after a hearty meal. In some cases adrenalin hypodermically (3–5 ♏ of $\frac{1}{1000}$ solution), in others morphine sulphate $\frac{1}{30}$ gr. or 3 gr. of chloral hydrate, cut short the attack. The inhalation of nascent oxygen has also proved valuable. After the paroxysm a cough constantly remains, and heroin in a syrup of hypophosphites is the best remedy. The author, after a study of twenty cases, finds that the majority of infants and children suffering from asthma recover.

F. R. B. Atkinson.

Effect of cold, fresh air on blood-pressure in pneumonia of children (*'Amer. Journ. Dis. Child.,'* 1912, III, *p.* 294).– **J. Howland** and **B. Raymond Hoobler,** using a Faught sphygmomanometer, found that the effect of cold, fresh air in children with active pneumonia was always to cause a rise in blood-pressure, and that removal to a warm but well-ventilated ward was to cause a fall. The rise was not apparent till half an hour or more, sometimes not until an hour after being put out of doors, and it did not reach the maximum till two hours. The effect lasted thirty hours, and there was no tendency for the pressure to fall until the patient was moved from the cold fresh air, when the pressure fell in fifteen or twenty minutes and usually reached its minimum in an hour. In convalescence the results were less striking and might even be absent. The authors attributed the influence on the blood-pressure to the reflex stimulation of the vaso-motor centre by the action of cold air on the skin of the face and nasal mucous

membrane. No other part of the child was exposed, and no additional factor could play a part. The charts of fifteen cases are reproduced in children aged from eighteen months to ten years (*cf.* BRITISH JOURNAL OF CHILDREN'S DISEASES, 1911, VIII, *p.* 470). J. D. ROLLESTON.

Treatment of summer diarrhœa (*'Guy's Hosp. Gaz.,'* 1912, XXVI, *p.* 267).—**H. C. Mann** amplifies his previous communications on this subject, and gives figures from some 3000 cases of "summer diarrhœa," noting the influence of the temperature, the age and weight of the child in the case and mortality incidence. He finds that "contact cases" are generally of a more severe type, and show more evidence of toxæmia than the primary case. As a result of the inspection of many homes he reports that contact cases are more frequent in the dirtier houses. The author bases his treatment on the view that collapse is the dangerous symptom, toxæmia being usually absent or negligible. Thus, he advises against the use of any eliminant measures, and strives throughout to lessen the loss of fluid and prevent starvation. For these purposes, in addition to repeated subcutaneous salines he employs liq. morphinæ hydrochlor. in 2-minim doses three to five times daily, usually with creasote, and advocates the use of small feeds of citrated milk throughout the acute stages of illness.

REGINALD MILLER.

The use of hypotonic salines controlled by estimation of the specific gravity of the blood in infantile diarrhœa (*'Brit. Med. Journ.,'* 1911, II, *p.* 1404).—**Leonard Rogers** has in a limited series of cases found the results so encouraging that he strongly pleads for a more extended trial of the method. The specific gravity of the blood is estimated, and it is found to be considerably above normal. The hypotonic salt solution is injected subcutaneously (or it may be given intra-venously, the best vein in the infant being the internal saphenous just as it crosses over the internal malleolus) at intervals until the specific gravity of the blood has been reduced to a little below normal. The solution used contained 120 gr. of sodium chloride and 4 gr. of calcium chloride to a pint of sterile water, and of this solution 7 oz. were used for each injection. Further, from ½ to 1 gr. of calcium permanganate was added to each pint of the fluid, with which the stomach and large bowel were washed out at the commencement of treatment, in order to destroy and remove as much as possible the toxic products of the gastro-intestinal tract. **Löbisch** (*'Semaine Méd.,'* 1911, XXXI, *p.* 564) has reported six cases of infantile cholera which he has treated by means of intra-venous injections of a 1·5 per cent. solution of sodium chloride. He has injected into the saphenous vein (once only subcutaneously) 150 to 230 c.c. of this solution warmed to 37° C. The infants were aged from four to fourteen months; they were drowsy, cyanosed, and showed all the symptoms of cardiac insufficiency. Some minutes after the saline injection the apathetic little patients opened their eyes and began to cry, the cyanosis disappeared and the diarrhœa stopped. At the end of two or three days the infants had returned to their normal state and were able to be fed as previously. J. ALLAN.

Treatment of gonorrhœa in girls (*'Journ. Amer. Med. Assoc.,'* 1912, LVIII, *p.* 1564).—**Morrow** and **Bridgman** report the results of treatment of 300 cases of gonorrhœa in young girls at the State training school for girls in Geneva, Illinois. They make the remarkable statement that 55 per

cent. of the girls admitted to this institution are infected with gonorrhœa. In most cases the disease affected the cervix. As regards treatment they consider douches worse than useless, and when used in conjunction with other treatment prevent the action of the latter. For cases in which a speculum can be used they recommend the application of 25 per cent. silver nitrate to the cervix and 10 per cent. to the vagina, followed by an application of 25 per cent. iodoform-glycerine. This treatment is not improved by the use of gonococcus vaccine. But the latter is recommended in little girls, combined with local cleanliness. Vaccines, however, are of most use in cases with joint complications. C. F. MARSHALL.

Reviews.

CONFÉRENCES PRATIQUES SUR L'ALIMENTATION DES NOURRISSONS. By Dr. P. NOBÉCOURT. Paris: Masson et Cie., 1912. Pp. 250 + xx. Price 4 fr.

THE book consists of a course of fifteen lectures on the feeding of infants with a preface by Prof. Hutinel. The earlier lectures deal with the development of the child and its physiological needs, the composition, etc., of human milk, and the technique of breast-feeding. The subjects of wet-nursing and the hygiene of the nurse and mother are also admirably dealt with. In the lecture on cow's milk some useful analytical tests are given, and excellent advice is tendered as to the choice of the cow, its feeding and housing and its milking. The organisms found in milk are described, and the various processes of sterilisation are discussed.

In Lecture VIII the author deals with the modification of cow's milk necessary for the child's requirements, and in connection with condensed milk he has a justifiable hit at the English by saying somewhat sarcastically that it is much used in London for the feeding of infants among the poor. Dried milk, it is interesting to note, is not extensively employed in France.

Lecture X, on the effects of defective artificial feeding, contains some valuable observations on the physiology and the maladies of the cow, and the writer is of the opinion that the frequency of the transmission of tubercle by means of cow's milk must not be exaggerated. In the following lecture are some interesting remarks on the milk of goats and the variations in its constituents in different species. Ass's milk is also dealt with, and an excellent comparison is drawn between the effects of natural and artificial feeding.

The subsequent lectures are occupied with the subjects of weaning, its results when badly conducted, and the food-value of various articles of diet. In the concluding discourses Dr. Nobécourt advocates the protection of nursing mothers and the State compensation for loss of work entailed by child-bearing. The various societies in France for providing maternity benefits are touched upon, and the protection of infants by means of *crèches*, *consultations de nourrissons* and *gouttes de lait* is described. All these things, though not as yet perfect, seem better and more extensively organised in France than in this country.

The whole subject is treated in a very masterly manner, and the book will be read with profit both by those who seek to learn and also by those who think that they are already familiar with the subject. Dr. Nobécourt writes in a delightfully easy style, and has produced a book which deserves to

become popular in other countries besides his own. The printing of the book is excellent, and there is a very complete index, a feature which is often wanting in foreign publications. T. R. W.

The Care of Infants and Young Children. By A. Dingwall Fordyce, M.D., F.R.C.P.Ed. Pp. 158. Edinburgh: E. S. Livingstone. Price 1s. 6d. net. Cloth covers 2s. net.

Dr. Dingwall Fordyde's attractive hand-book leads off with an excellent description of healthy infancy, and Professor Preyer's observations on the ages at which various powers are acquired are arranged in a handy tabular form.

Wise guidance is given concerning infant feeding, and it is pleasing to notice that barley-water is condemned. The abuse and the occasional use of the most widely advertised patent foods are emphasised, and the period at which each brand is likely to be of service is clearly indicated. In the section on hygiene the author states definitely the earliest dates on which newly born infants may be taken out of doors—a useful piece of information for those about to enter practice. Interesting remarks on infantile mortality and its relation to social conditions are followed by a cursory description of some of the commoner ailments of infancy. In the brief reference to syphilis it is implied that the mother of a syphilitic is not herself syphilitic. This is surely, in the light of recent research, likely to give rise to serious neglect.

In the section on feeding the citration of milk is fully described; this is a method which is certain to become popular, especially in municipal work.

It is surprising to see a mild condonation of the dummy teat. Its power to deform the palate is ignored.

When dealing with rheumatism the author makes no mention of the undoubted tendency of the red-haired to this disease, and to the nervous instability of these children. A simple clinical point of this nature should be insisted on in a popular treatise.

This excellent little work concludes with a chapter on health visitors, and the necessity of such officials to a properly organised hospital out-patient department. C. R.

Sixth Annual Report of the Henry Phipps Institute for the Study, Treatment and Prevention of Tuberculosis. February the 1st, 1908, to February the 1st, 1910. Published by the Henry Phipps Institute, Philadelphia, 1912. Pp. 137.

After statistics relating to clinical and pathological work, this report concludes with certain papers detailing experimental work in which the Directors act as Editors. Under "The Relation of Intestinal Absorption to Pulmonary Anthracosis," Dr. C. Montgomery, after full consideration of the views of Calmette and Guérin, gives details of his own experiments which lead him to the opinion that the alimentary route is practically a negligible quantity. As a result of experiments by Dr. D. Blackwood, jun., as to whether the virulence of the tubercle bacillus might be attenuated or lost when submitted to the action of an extract of the pancreas, it was found that the bacilli (in the case of animals susceptible to tuberculosis, such as guinea-pigs) did not have their virulence modified, though they could be slightly digested and have their virulence reduced by the gastric juice. A report on the ophthalmo-tuberculin reaction, by the same investigator, states that no injurious effects on the eyes have occurred from his

application of this method, and that there was a negative result when a previous lesion had healed; and, in rapidly progressing cases, the degree of reaction was of no value in prognosis and had no relation to the extent of involvement of the lung. An investigation by Dr. E. Burville Holmes into the finding of tubercle bacilli in the blood of tuberculous patients, as reported by Rosenberger, concludes that a probable source of error was the distilled water used, and that tubercle bacilli do not constantly circulate in the blood, though they are occasionally present. Thus the research agency of the Institute is fully maintained since, in 1910, it was placed under the control of the University of Pennsylvania. J. E. B.

The Prevention of Dental Caries. By J. Sim Wallace. Pp. 71. London: The Dental Manufacturing Co., 1912. Price 1s 6d. net.

Dr. Sim Wallace's interesting book was fully reviewed in the April number of this Journal. The increase in size is due, not to an increase in matter, but to improved printing and a more convenient shape. With some trifling additions to the bibliography the volume under consideration is practically a reprint of the first edition. In view of Dr. Wheatley's researches in Shropshire, which clearly bring out the fact that caries depends upon the amount of sweetmeats consumed, Dr. Wallace's statement that the bon-bon craving can be restrained by proper feeding with fruit is of peculiar interest. C. R.

The Care of Infants and Young Children in Health. By Mildred Burgess, M.D. London: H. K. Lewis, 1912. Price 1s. net.

Since this excellent little work was reviewed in this Journal its favourable reception has necessitated the publication of a revised and enlarged edition. Dr. Burgess has added some sound remarks on the care of the teeth and the necessity for the dental attention of the temporary set. She is sufficiently a convert to the views of Dr. Sim Wallace to recommend hard crust for young children in preference to the soft food of the older physicians. But hardly sufficient emphasis is laid upon the fact that the food and not the tooth-brush is the important agent in cleansing the teeth and preventing decay. A table of the normal increase in weight of the infant is needed. C. R.

Feeding and Care of Infants and Children, with Special Reference to Cases of Difficult Digestion. By Nurse Hughes. London: Simpkin, Marshall, Hamilton, Kent & Co., Ltd. Price 2s. 6d.

We have received a copy of this little book, which is primarily meant for mothers who have to rear their children by artificial feeding. Nurse Hughes has been privileged to work under Dr. Eustace Smith, and it is at his instigation that she has been prevailed upon to write this small volume. After some short chapters on the hygienic care of infants she deals with the question of feeding, and she gives sound, sensible, and practical advice on this matter. To illustrate the methods adopted she includes histories of six cases which have been under her care. In the last chapter there are remarks on the dietetic *régime* of older infants and young children. The instructions are clear and simple, and should be easily understood. The book should prove of the utmost service to all interested in the subject of infant feeding, including medical practitioners, especially those who are just qualified, as their knowledge of this matter is in many cases somewhat limited. J. A.